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PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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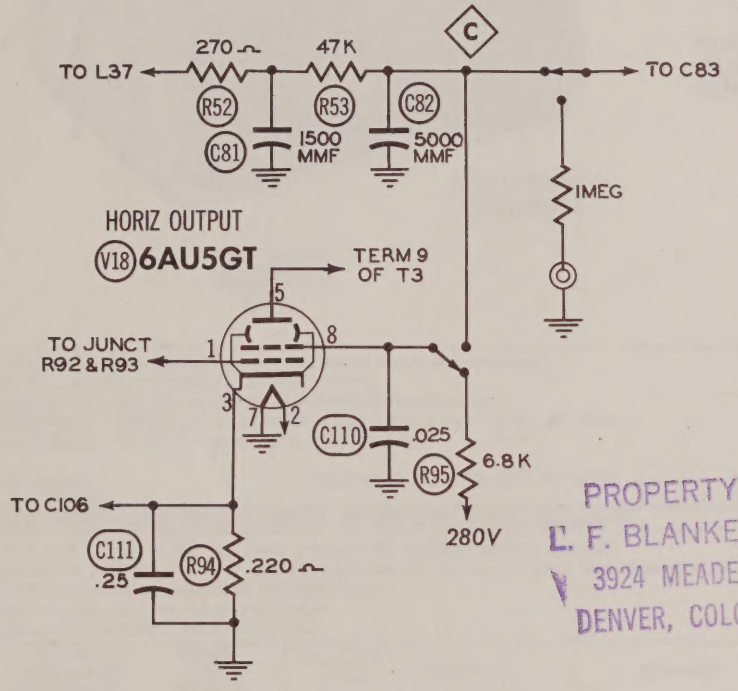
SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 16 IN SET 225

Silvertone Models 3360, 3361, 3368, 3371, 3372, 3373, 3374, 3375, 3380 (Ch. 456.200-11, -12, -13, -21, -22, -23), 3389 (Ch. 456.200-1, -2, -3), 3395, A, 3396, 3397, 3398 (Ch. 456.200-11, -12, -13, -21, -22, -23), 3399, 4108 (Ch. 456.200-1, -2, -3), 4116W, 4117W, 4118W, 4119W, 4127W and 4129W (Ch. 456.200-11, -12, -13, -21, -22, -23) are identical to models 3376 and 3377 covered in Photofact Folder 16 - Set 235, except for the following:

The AM tuner and its power socket are omitted in Ch. 456.200-1, -2, -3, -11, -12, -13, -21, -22, -23). C88 was omitted. A phono socket and TV-phono switch were added. A partial schematic is given below which shows this circuit.



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All of the 456.200 series chassis are identical, except for UHF tuners and picture tubes. A chart is given below which shows the tuner and picture tube used in each chassis.

CHASSIS	VHF TUNER	UHF TUNER	CRT
456.200-1	PMB-57006	PMC-57007	17HP4 or 17LP4
456.200-2	PMB-57006	PMC-57008	17HP4 or 17LP4
456.200-3	PMB-57006	PMC-57009	17HP4 or 17LP4
456.200-11	PMB-57006	PMC-57007	21MP4
456.200-12	PMB-57006	PMC-57008	21MP4
456.200-13	PMB-57006	PMC-57009	21MP4
456.200-21	PMB-57006	PMC-57007	21YP4 or 21AFP4
456.200-22	PMB-57006	PMC-57008	21YP4 or 21AFP4
456.200-23	PMB-57006	PMC-57009	21YP4 or 21AFP4

SILVERTONE MODELS 3360, 3361, 3368, 3371, 3372, 3373, 3374, 3375, 3380, (Ch. 456.200-11, -12, -13, -21, -22, -23), 3389 (Ch. 456.200-1, -2, -3), 3395, A, 3396, A, 3397, 3398 (Ch. 456.200-11, -12, -13, -21, -22, -23), 3399, 4108 (Ch. 456.200-1, -2, -3), 4116W, 4117W, 4118W, 4119W, 4127W, 4129W (Ch. 456.200-11, -12, -13, -21, -22, -23)

PRODUCTION CHANGES
BULLETIN 109

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	The schematic for the PMB-57006, VHF tuner, and the PMC-57009, UHF tuner, is given on page 2 in Photofact Folder 16 - Set 225. The schematic for the PMC-57007 and PMC-57008, UHF tuners are given on page 20.
Serial No. 158, 574 & up	In later production of the 456.200 series chassis the following changes were made. A 2.7KΩ resistor was added in series with the B+ lead from C49 to the junction of R13 and C22.
Serial No. 160, 301 & up	C5 was changed from 20MFD to 8MFD and connected to ground instead of to 280V.
Serial No. 160, 726 & up	A 10KΩ resistor was added from pin 3 of the video detector (V7A) to ground and a 1500MMF capacitor was added from pin 1 of V7A to ground, instead of grounding pin 1 directly.
Serial No. 162, 001 & up	C113, connected between terminals 3 and 7 of T3 was omitted.

RETMA MEMBER

BUICK MODEL 981551

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

BUICK MODEL 981551

TRADE NAME	Buick Model 981551 (For 1954 Series 40-50 & Series 70 Buick Automobiles)
MANUFACTURER	Buick Motors, Div. of General Motors, Detroit, Mich.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (Eight)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12BF6 Det. -AVC-AF Amp., (2) 12V6GT Audio Output, 12AU7 Trigger Tube, 0Z4 Rectifier
POWER SUPPLY	12 Volt Storage Battery — RATING 3 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Connect the positive lead of a 12.6 volt source to the "A" lead. Connect the negative lead to chassis.
Volume controls should be at maximum position.Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set volume control for maximum volume and tone control to treble.
Attenuate generator output to maintain less than 2 volts at VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to chassis.	262KC	High frequency end stop (see remarks)	DC probe to ungrounded side of C2. Common to chassis.	A1, A2, A3	Insert 0.070" feeler gauge (or bare #13 wire) in slot against high frequency stop. Allow planetory arm to run against feeler gauge by depressing station selector bar. Switch radio off, then back on again. Adjust A1, A2 and A3 for maximum deflection.
2.	"	"	"	"	"	A4	Adjust for MINIMUM deflection.
3.	75MMF	High side thru 75 MMF to antenna receptacle. Low side to chassis.	1615KC	"	"	A5, A6, A7	Check setting of oscillator core (A8). Rear of core should 1 25/32" from mounting end of coil form. If necessary make this adjustment and re-seal core. Adjust A5, A6 and A7 for maximum deflection.
4.	"	"	600KC	Tune to 600KC signal	"	A9, A10	Adjust for maximum deflection.
5.	"	"	1615KC	Tune to 1615KC signal	"		Readjust A6 and A7 for maximum deflection.
6.	"	"	1000KC	Tune to 1000KC signal	"		If necessary, set pointer to 1000KC on dial scale with dial pointer adjustment screw.
7.	With radio installed in car and antenna fully extended tune in a weak station between 600KC and 1000KC and adjust A7 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		BUICK PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp	12BF6	12BF6	7BT	
V5	Audio Output	12V6GT	12V6GT	7S	
V6	Audio Output	12V6GT	12V6GT	7S	
V7	Trigger	12AU7	12AU7	9A	
V8	Rectifier	0Z4	0Z4	4R	

CAPACITORS

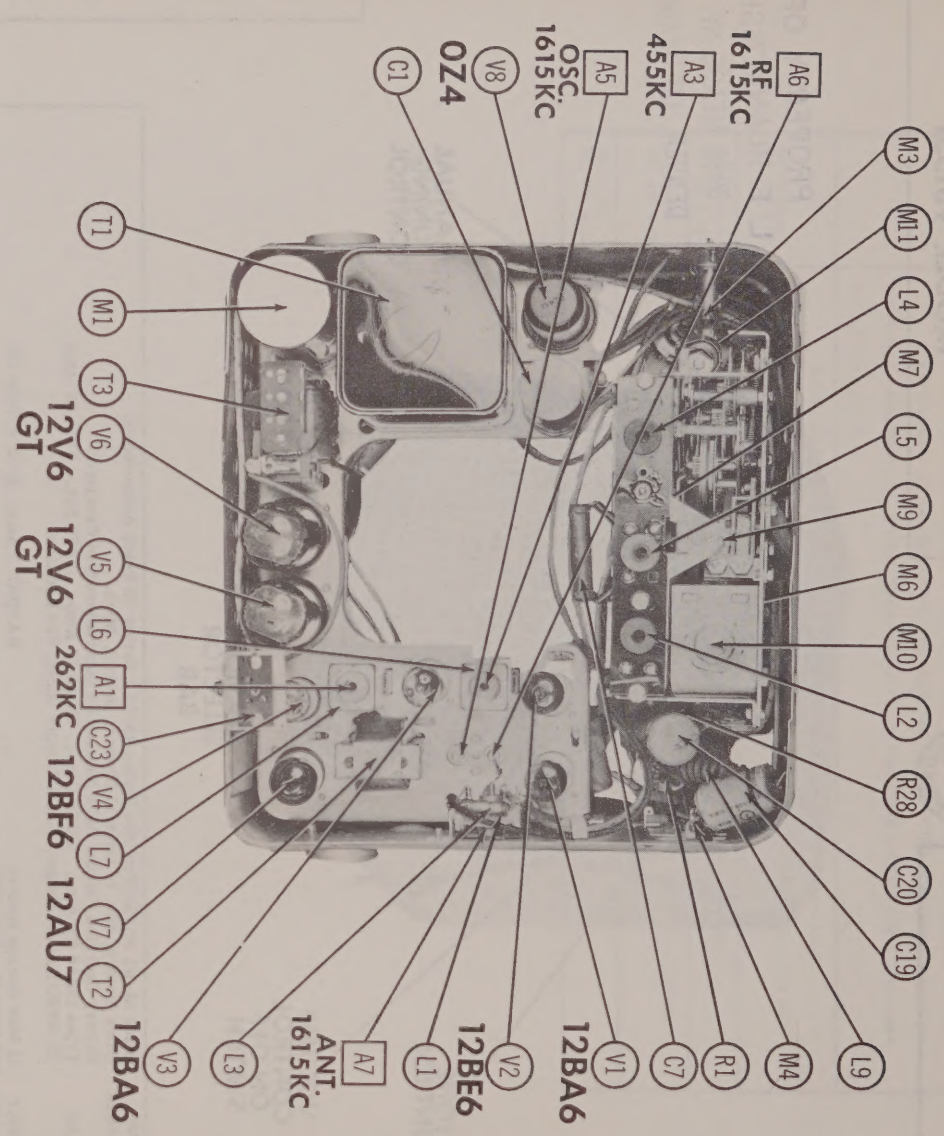
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BUICK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	400	M-908	AFH3-120		C099		FP345.8	TVL-3678	
B	▲20	400								
C	20	25								
C2	.05	200	6512	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	68	500	G-680	1468-000070		5W5Q68			MS-47	
C4	.1	400	6513	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C5	.05	200	6512	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	39	500	G-390	1468-00004		5W5T39		MCB223	MS-44	
C7	260		7257567							
C8	.1	400	6590	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C9	100	500	1219498	1468-0001		5W5T1		MCB235	MS-31	
C10	100	500	1219498	1468-0001		5W5T1		MCB235	MS-31	
C11	.005	600	6531	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C12	200	500	7231178	1468-0002		5W5T2		MCB237	MS-32	
C13	.004	600	6530	P688-004	D6-402	CUB6D4	GP2-333-402	PT625	6TM-D4	
C14	220	500	G-221	1468-0002		5W5T2		MCB237	MS-32	
C15	.2	400	6514	P488-2		CUB4P2		PT402	4TM-P2	
C16	.025	400	1211232	P488-025		CUB4P25		PT4125	4TM-S25	
C17	.0015		7236134	P1088-0015		CUB16D15		PT16215	MB-D15	
C18	.002	600	6528	P688-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C19	.5	100	6592	VHC-36		PJ2P5		RF480	HC-3	
C20	.5	200	6592	VHC-36		PJ2P5		RF480	HC-3	
C21	.47	100	6592	VHC-36		PJ2P5		RF480	HC-3	
C22	.007	1600	H-702	P1688-007		CUB16D7		PT1627	MB-D7	
C23	100	500		1468-0001		5W5T1		MCB235	MS-31	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BUICK PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	250KΩ	½	7264309					Tone - Panel
B	500KΩ	½						Volume & Switch - tapped @ 220KΩ - Rear

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BUICK PART No.	IRC PART No.	
R2	2.2Meg	1/2	A-225	BTS-2.2Meg	
R3	100Ω	1/2	A-101	BTS-100	
R4	15KΩ	1		BTA-15K	Note 1
R5	330KΩ	1/2	A-334	BTS-330K	
R6	22KΩ	1/2	A-223	BTS-22K	
R7	12KΩ	2	1212491	BTB-12K	
R8	1.5Meg	1/2	A-155	BTS-1.5Meg	
R9	150Ω	1/2	A-151	BTS-150	
R10	10Ω	1/2	A-100	BTS-10	
R11	1Meg 5%	1/2	1220169	BTS-1Meg 5%	
R12	1.5Meg 5%	1/2	1219492	BTS-1.5Meg 5%	
R13	1Meg	1/2	A-105	BTS-1Meg	
R14	1000Ω 5%	1/2	1220176	BTS-1000 5%	
R15	3300Ω	1/2	1220173	BTS-3300	
R16	27KΩ	1	B-273	BTA-27K	
R17	47KΩ	1/2	A-473	BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BUICK PART No.	IRC PART No.	
R18	68KΩ	1/2	A-683	BTS-68K	
R19	820KΩ	1/2		BTS-820K	Note 2
*R20	360Ω	1	7234563	BTA-360	
R21	150Ω	1/2	A-151	BTS-150	
R22	560Ω	1/2	1213229	BTS-560	
R23	2200Ω	1/2	A-222	BTS-2200	
R24	120KΩ	1/2	1213271	BTS-120K	
R25	6800Ω	1	1216154	BTA-6800	
R26	47KΩ	1	B-473	BTA-47K	
R27	47KΩ	1	B-473	BTA-47K	
R28	12KΩ	1		BTA-12K	
R29	1100Ω 5%	1		BTA-1100 5%	Note 3
R30	5.6Meg	1/2	1215562	BTA-5.6Meg	
R31	1800Ω	2			
R32	15KΩ	1	B-153	BTA-15K	
R33	820Ω	1	1216152	BTA-820	

Note 1. Some models may use a 10KΩ resistor in this application.
Note 2. Some models may use 1.5Meg resistor in this application.
Note 3. Some models may use a 1000Ω resistor in this application.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	BUICK PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	12.6VCT @2A	400VCT .058ADC			6066					

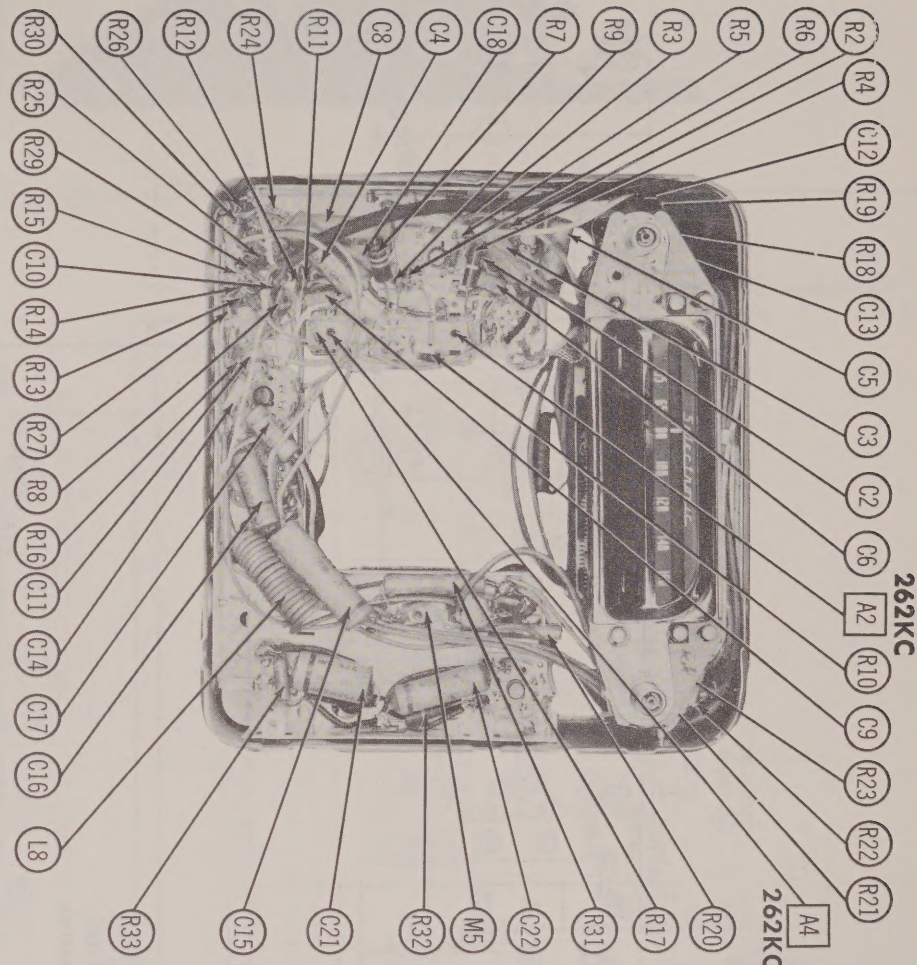
TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	BUICK PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T2	1.8KΩ CT				6061					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BUICK PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T3	7.8KΩ CT	4Ω	6063	A-3852	A-2936	S-15X	Z1002	22S87	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	BUICK PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6 x 9"	PM	4Ω	7264667	ST-810 Mod. P69-V	69A2	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	BUICK PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coupling	.7Ω			19-1004		4610	Not used in all Models, 6.7 Microhenries
L2	Ant. Coil	10Ω		7257979				
L3	Ant. Coupling	4.6Ω		7240251	19-6022		4626	28 Microhenries
L4	RF Coil	10Ω		7257979				
L5	Osc. Coil	.8Ω	4.2Ω	7263287				
L6	Input IF	38Ω	38Ω	1219508	16-6752	BC-350	12-H1	
L7	Output IF	32Ω	32Ω	1220204	16-6754	BC-354	12-H6	
L8	Fil. Choke	0Ω		1217846				
L9	Fil. Choke	0Ω		1217846				Not used in all Models

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA				NOTES
				BUICK PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interruptor	12.6V	115∿	8550	6330	G-874	6330	

PARTS LIST AND DESCRIPTIONS (Continued)

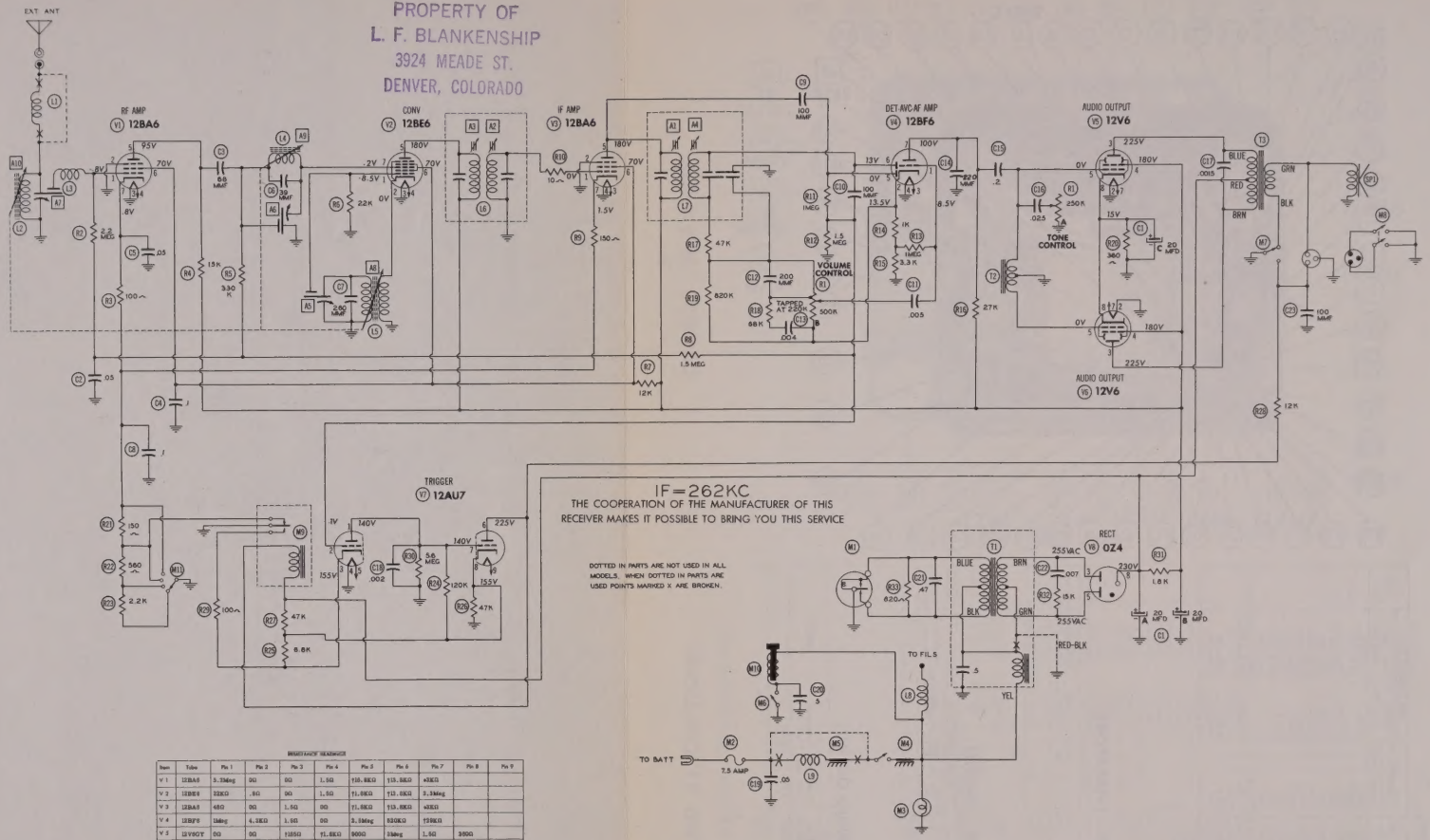
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BUICK PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	7AG	7.5A	7263227	1220177	30307.5 (7AG-7.5A)	155009	AGW7 1/2	HRH

MISCELLANEOUS

ITEM No.	PART NAME	BUICK PART No.	NOTES
M3	Dial Light		#57 Bayonet
M4	Spark Plate	7257906	
M5	Spark Plate		
M6	Switch	7263340	Tuner Return
M7	Switch	7263345	Station Selector - hand bar operated
M8	Switch	7258903	Foot station selector
M9	Relay	1220326	
M10	Solenoid	7263425	Plunger
M11	Switch	7264286	Sensitivity Control
A7	Trimmer Cap.	7264297	Antenna
A5,A6	Trimmer Cap.	7242454	Dual - RF & Osc.
	Knob	1163889	Tuning & volume
	Knob	1163621	Sensitivity
	Knob	1163633	Tone

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	5.33Meg	0Ω	0Ω	1.5Ω	†15.8KΩ	†13.8KΩ	∞KΩ		
V 2	12BE6	22KΩ	.8Ω	0Ω	1.5Ω	†1.0KΩ	†13.8KΩ	5.33Meg		
V 3	12BA6	48Ω	0Ω	1.5Ω	0Ω	†1.0KΩ	†13.8KΩ	∞KΩ		
V 4	12BF6	1Meg	4.1KΩ	1.5Ω	0Ω	5.33Meg	820KΩ	725KΩ		
V 5	12V6GT	0Ω	0Ω	†285Ω	†1.6KΩ	900Ω	5Meg	1.5Ω	360Ω	
V 6	12V6GT	550KΩ	0Ω	†285Ω	†1.6KΩ	900Ω	INF	1.5Ω	360Ω	
V 7	12AU7	170KΩ	1.5Meg	54KΩ	0Ω	1.5Ω	†1.7KΩ	170KΩ	67KΩ	0Ω
V 8	0Z4	0Ω	INF	214Ω	INF	238Ω	INF	INF	190KΩ	

† MEASURED FROM PIN 5 OF V8
* MEASURED WITH SENSITIVITY AT MINIMUM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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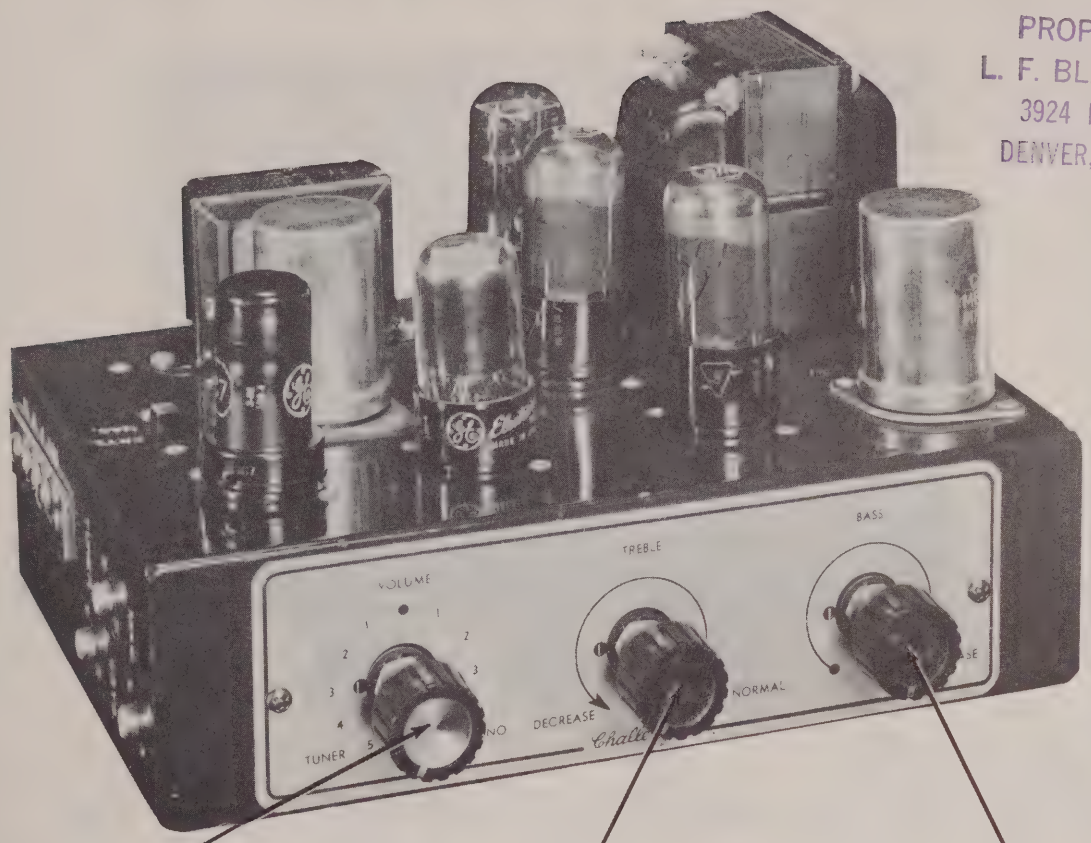
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHALLENGER
MODEL HF8



VOLUME CONTROL

TREBLE CONTROL

BASS CONTROL ON-OFF SWITCH

CHALLENGER
MODEL HF8

TRADE NAME	Challenger Model HF8
MANUFACTURER	Challenger Amplifier Co., 29 Ninth Ave., New York 14, N. Y.
TYPE SET	AC Operated 3 Channel 8 Watt Audio Amplifier
TUBES (Five)	Types 6SC7 Pre. Amp., 6SL7GT AF Amp.-Phase Inv., (2) 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .43 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

CHALLENGER MODEL HF8

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Pre-Amplifier AF-Amplifier	6SC7	6SC7	8S	
V2	AF Amp. & Phase Inv.	6SL7GT	6SL7GT	8BD	
V3	Audio Output	6V6GT	6V6GT	7S	
V4	Audio Output	6V6GT	6V6GT	7S	
V5	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: CHALLENGER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲10	450		AFH4-09		D008		WP433.6	R1508	
B	▲10	450								
C2A	▲5	450		AFH4-09		D008		WP433.6	R1424	
B	5	450								
C	▲5									
D	■5									
C3	10	25		PRS25/10		BR102		TC22	TVA-1204	
C4	150	500		1469-00015		5W5T15		MC236	1FM-315	
C5	100	500		1469-0001		5W5T1		MC235	1FM-31	
C6	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.02	400		P488-02		CUB4S2		PT412	4TM-S2	
C8	2200	500		1464-002		1W5D22		MC457	1FM-22	
C9	.02	400		P488-02		CUB4S2		PT412	4TM-S2	
C10	.006	600		P688-006	D6-602	CUB6D2	GP2-333-602	PT622	6TM-D2	
C11	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C12	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C13	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C14	.05	400		489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	

CONTROLS

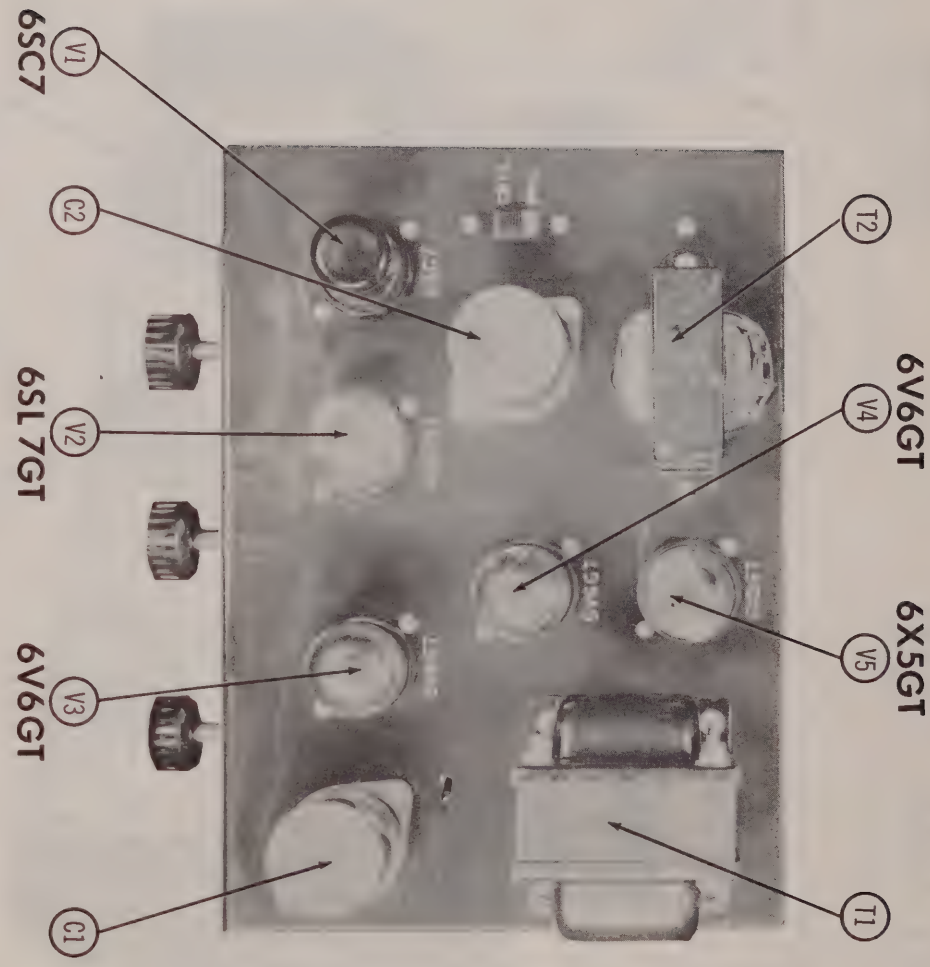
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Challenger PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	V338A	Q19-137X	AT-112		UT-443	Volume - tapped @ 500KΩ
B	Shaft		Not Req.	Not Req.	FS-3		Not Req.	Attach to R1A
R2A	500KΩ	½	V340A	Q13-133	A47-500K-Z	B-60	U-48	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	25KΩ	½	V339A	Q14-120	A47-25K-V	B-27-S	U-26	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R3A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Challenger PART No.	IRC PART No.	NOTES
R4	2.2Meg	½		BTS-2.2Meg	
R5	47KΩ	½		BTS-47K	
R6	1Meg	½		BTS-1Meg	
R7	68KΩ	½		BTS-68K	
R8	1Meg	½		BTS-1Meg	
R9	100KΩ	½		BTS-100K	
R10	100KΩ	½		BTS-100K	
R11	100KΩ	½		BTS-100K	
R12	100Ω	½		BTS-100	
R13	2200Ω	½		BTS-2200	
R14	2200Ω	½		BTS-2200	
R15	220KΩ	½		BTS-220K	
R16	220KΩ	½		BTS-220K	
R17	18KΩ	½		BTS-18K	
R18	470KΩ	½		BTS-470K	Note 1
R19	470KΩ	½		BTS-470K	
R20	270Ω	2			
R21	2200Ω	½		BTS-2200	
R22	3300Ω	½		BTS-3300	
R23	2200Ω	2		BTB-2200	
R24	47KΩ	2		BTB-47K	

Note 1. Some models may use a 4.7Meg resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHALLENGER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordorson PART No.
T1	117VAC @ .43A	520VCT .070ADC	6.3VCT @ 2.01A		T3115	PC-8404① ②	P-3148 ①	R-10A ① ②	P-9206① ②	T-26R31U ①

① Drill new mounting holes.
② Tape 5V windings.

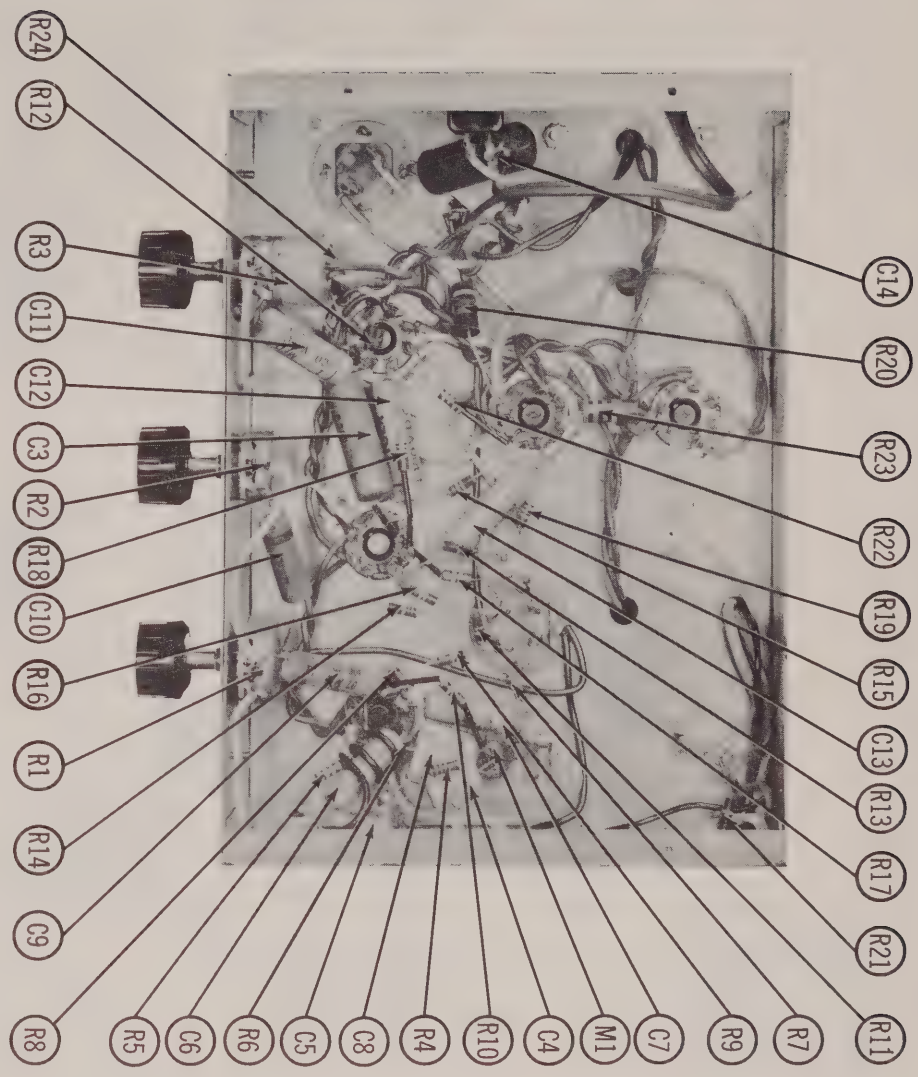
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Challenger PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordorson PART No.	
T2	10KΩ CT	16Ω tap @ 8Ω, 4Ω	T292		A-3027		Z1404	22S44	

MISCELLANEOUS

ITEM No.	PART NAME	Challenger PART No.	NOTES
M1	Switch	S381	Phono pickup selector

CHASSIS—BOTTOM VIEW



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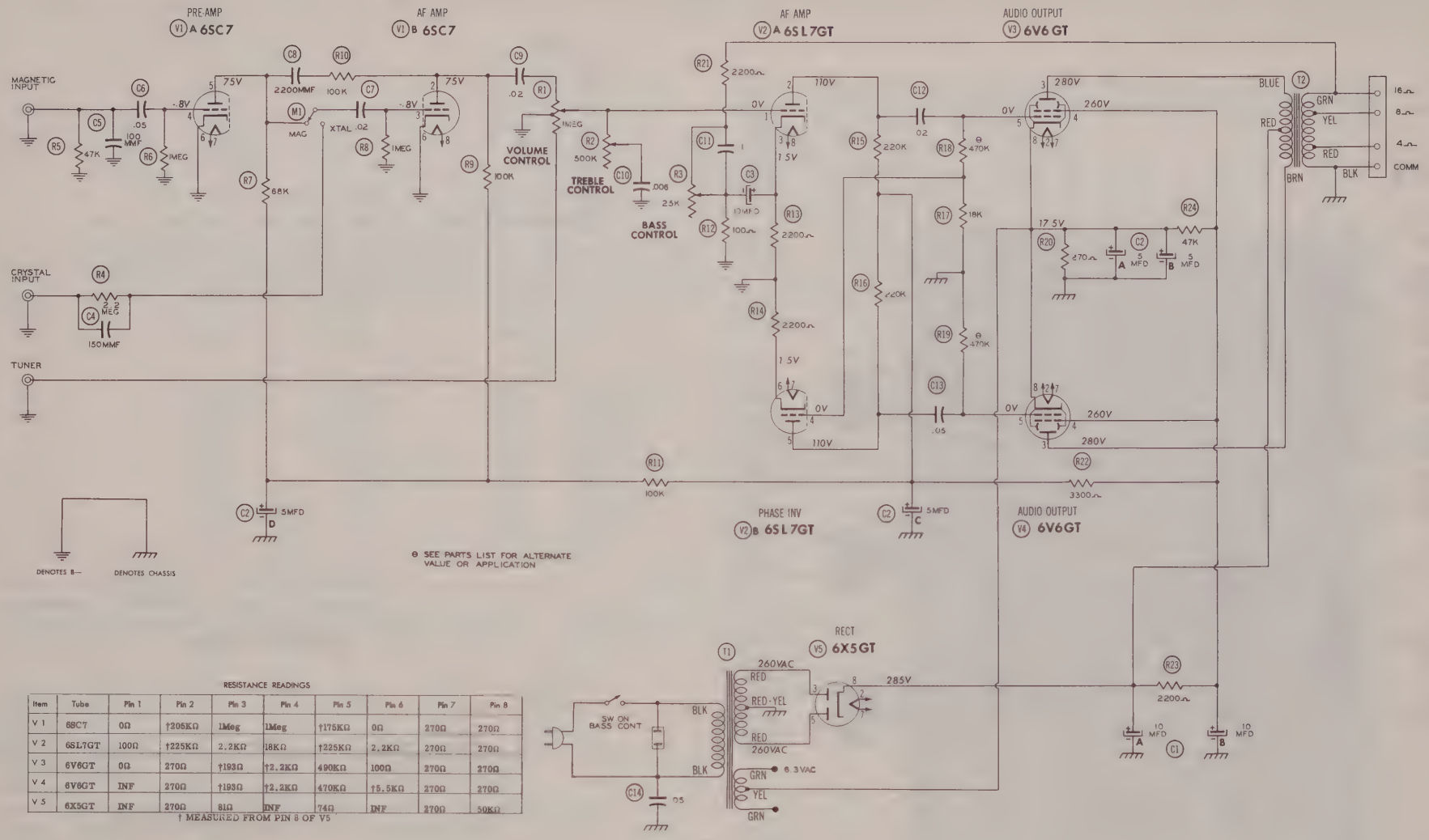
DENVER, COLORADO

CHALLENGER MODEL HF8



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†205KΩ	1Meg	1Meg	†175KΩ	0Ω	270Ω	270Ω
V 2	6SL7GT	100Ω	†225KΩ	2.2KΩ	18KΩ	†225KΩ	2.2KΩ	270Ω	270Ω
V 3	6V6GT	0Ω	270Ω	†193Ω	†2.2KΩ	490KΩ	100Ω	270Ω	270Ω
V 4	6V6GT	INF	270Ω	†193Ω	†2.2KΩ	470KΩ	†5.5KΩ	270Ω	270Ω
V 5	6X5GT	INF	270Ω	81Ω	INF	74Ω	INF	270Ω	50KΩ

† MEASURED FROM PIN 8 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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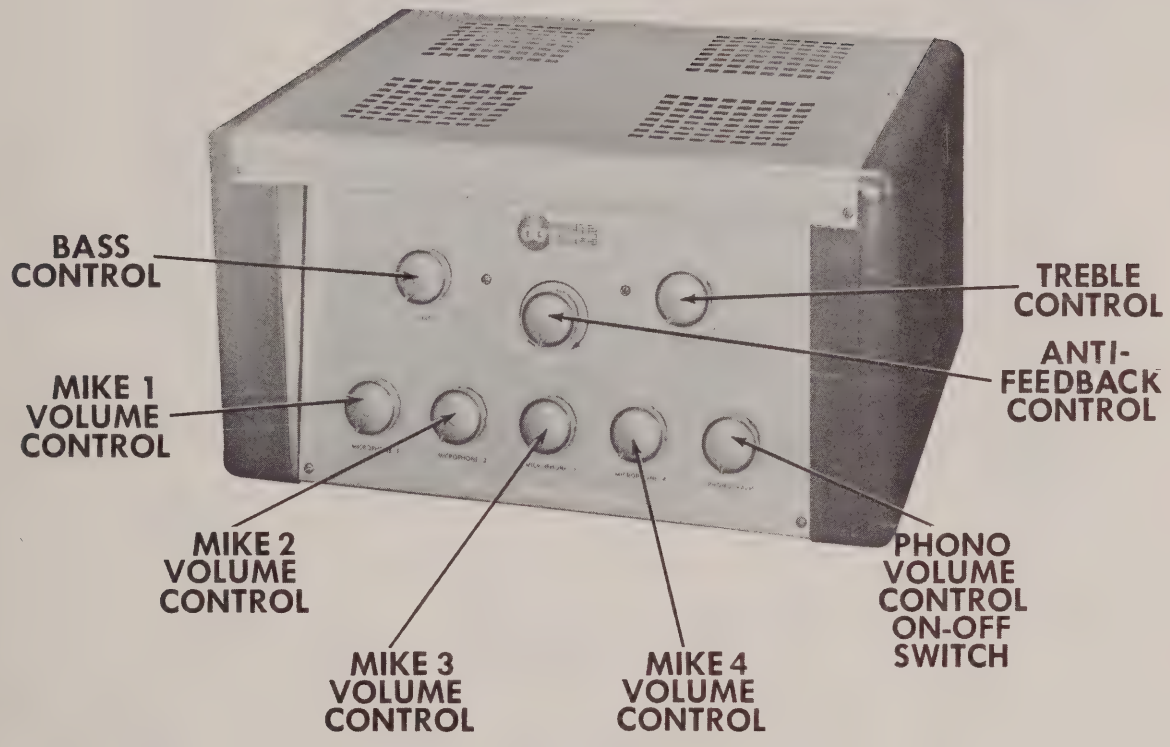
DAVID BOGEN
MODEL JX30



DAVID BOGEN
MODEL JX30

TRADE NAME	David Bogen Model JX30
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 1, N.Y.
TYPE SET	AC Operated 5 Channel 30 Watt Audio Amplifier
TUBES	Eleven
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.23 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1	Mic-Pre Amp.	6SF5	6SF5	6AB	
V2	Mic-Pre. Amp.	6SF5	6SF5	6AB	
V3	Mic-Pre.Amp.	6SF5	6SF5	6AB	
V4	Mic-Pre. Amp.	6SF5	6SF5	6AB	
V5	Mixer & Phono Pre. Amplifier	6SC7	6SC7	8S	
V6	AF Amplifier	6SF5	6SF5	6AB	
V7	AF Amplifier	6SC7	6SC7	8S	
V8	Phase Inverter	6SL7GT	6SL7GT	8BD	
V9	Audio Output	6L6	6L6	7S	
V10	Audio Output	6L6	6L6	7S	

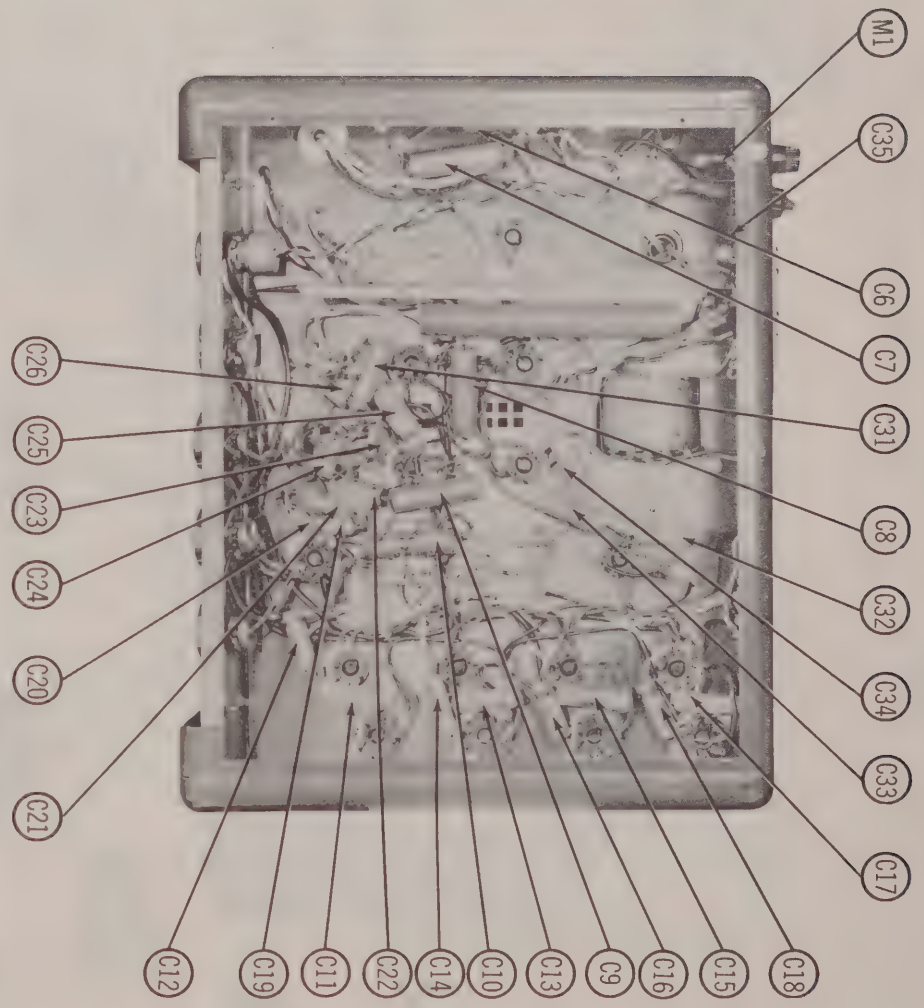
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	4	600		GL600/4		KR604C		HS691	AP-46	
C2A	8	500				EB10023				
B	8	500								
C3A	▲5	450		AFH4-09		D008		WP433.6	R1424	
B	■5	450								
C	▲5	450								
D	5	450								
C4A	▲5	450		AFH4-09		D008		WP433.6	R1424	
B	■5	450								
C	▲5	450								
D	5	450								
C5A	▲20	450		AFH4-09		D008		WP433.6	R1508	
B	▲10	450								
C6	50	50		PRS50/50		BR505		TC39	TVA-1308	
C7	100	25		PRS25/100		BRH251		TC2501	TVA-1207	
C8	100	25		PRS25/100		BRH251		TC2501	TVA-1207	
C9	100	25		PRS25/100		BRH251		TC2501	TVA-1207	
C10	100	25		PRS25/100		BRH251		TC2501	TVA-1207	
C11	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C12	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C13	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C14	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C15	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C16	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C17	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C18	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C19	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C20	470	500		1469-0005		5R5T47		MC245	MS-35	
C21	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C22	2000	500		1464-002		1R5D2		MC457	MS-22	
C23	3300	500		1464-003		1R5D33		MC461	MS-23	
C24	150	500		1469-00015		22R5T15		MC236	MS-32	
C25	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C26	.25	400		P488-25		CUB4P25		PT4025	4TM-P25	
C27	2000	500		1464-002		1R5D2		MC457	MS-22	
C28	2000	500		1464-002		1R5D2		MC457	MS-22	
C29	200	500		1469-0002		22R5T2		MC237	MS-32	Note 1
C30	3800	500		1464-004		1R5D39		MC463	1FM-24	Note 1
C31	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C32	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C33	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C34	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C35	.047	600		689ZX-047	DF-503	PJ4S47		PT4147	4TM-S47	

Note 1. Not used in all Models.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V202C	Q13-133	A47-500K-Z	B-60	U-48	Microphono No. 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	V202C	Q13-133	A47-500K-Z	B-60	U-48	Microphono No. 2
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	V202C	Q13-133	A47-500K-Z	B-60	U-48	Microphono No. 3
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	V202C	Q13-133	A47-500K-Z	B-60	U-48	Microphono No. 4
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	500KΩ	½	V149B	Q13-133	A47-500K-Z	B-60-S	U-48	Phonograph Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R5A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R5A
R6	300KΩ	½	V333					Treble- tapped @ 200K
R7A	300KΩ	½	V282B					Anti-feedback & switch
B	7000Ω	½						
C	150KΩ	½						
R8	500KΩ	½	V334					Bass

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R9	2.2Meg	½		BTS-2.2Meg	
R10	220KΩ	½		BTS-220K	
R11	47KΩ	½		BTS-47K	
R12	2.2Meg	½		BTS-2.2Meg	
R13	220KΩ	½		BTS-220K	
R14	47KΩ	½		BTS-47K	
R15	2.2Meg	½		BTS-2.2Meg	
R16	220KΩ	½		BTS-220K	
R17	47KΩ	½		BTS-47K	
R18	2.2Meg	½		BTS-2.2Meg	
R19	220KΩ	½		BTS-220K	
R20	47KΩ	½		BTS-47K	
R21	220KΩ	½		BTS-220K	
R22	220KΩ	½		BTS-220K	
R23	220KΩ	½		BTS-220K	
R24	220KΩ	½		BTS-220K	
R25	1000Ω	½		BTS-1000	
R26	100KΩ	½		BTS-100K	
R27	68KΩ	½		BTS-68K	
R28	47KΩ	½		BTS-47K	
R29	100KΩ	½		BTS-100K	
R30	47KΩ	½		BTS-47K	
R31	33KΩ	½		BTS-33K	
R32	68KΩ	½		BTS-68K	
R33	470KΩ	½		BTS-470K	
R34	68KΩ	½		BTS-68K	
R35	1000Ω	½		BTS-1000	
R36	1 Meg	½		BTS-1 Meg	
R37	2200Ω 5%	½		BTS-2200 5%	
R38	100KΩ	½		BTS-100K	
R39	220KΩ	½		BTS-220K	

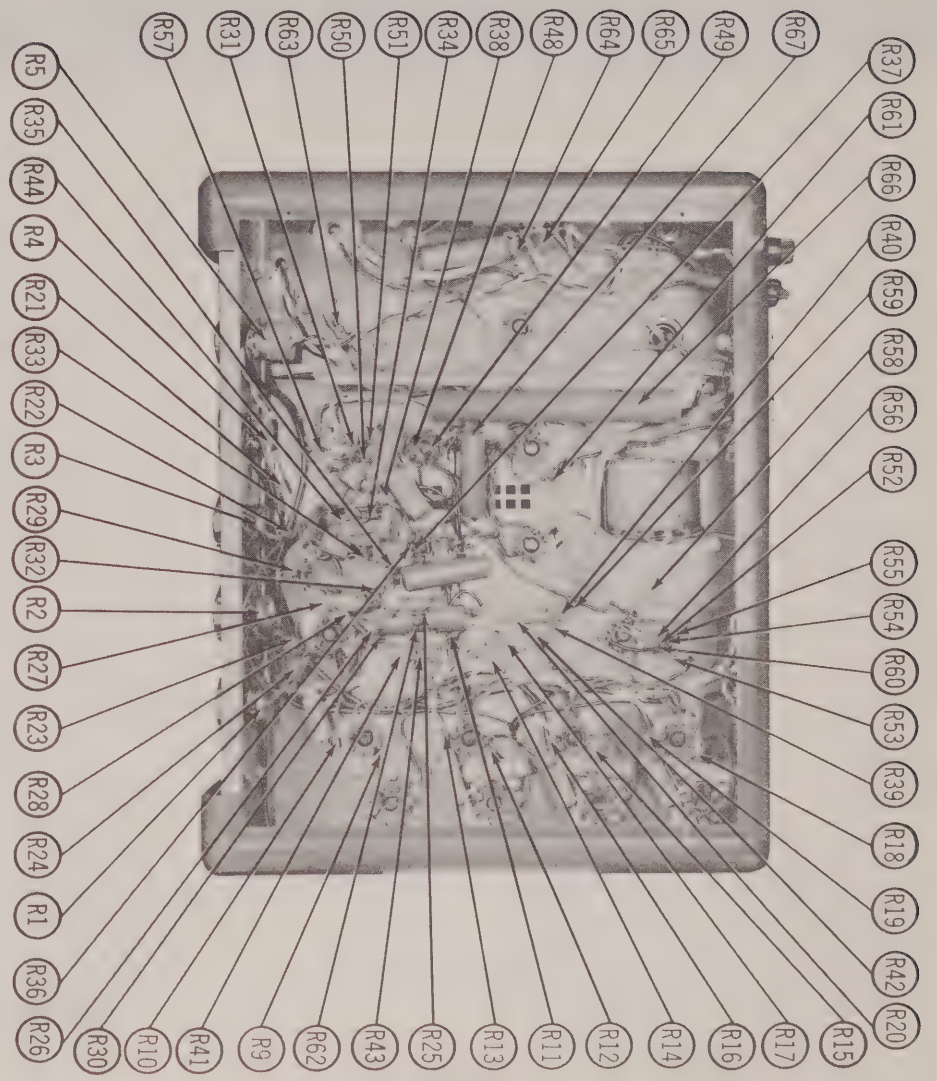
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R40	220KΩ	½		BTS-220K	
R41	220KΩ	½		BTS-220K	
R42	220KΩ	½		BTS-220K	
R43	220KΩ	½		BTS-220K	
R44	10KΩ 5%	½		BTS-10K 5%	
R45	10KΩ 5%	½		BTS-10K 5%	
R46	20K 5%	½		BTS-20K 5%	
R47	20KΩ 5%	½		BTS-20K 5%	
R48	470KΩ	½		BTS-470K	
R49	3300Ω	½		BTS-3300	
R50	100KΩ	½		BTS-100K	
R51	100KΩ	½		BTS-100K	
R52	470KΩ	½		BTS-470K	
R53	1500Ω	½		BTS-1500	
R54	1500Ω	½		BTS-1500	
R55	220KΩ	½		BTS-220K	
R56	220KΩ	½		BTS-220K	
R57	47KΩ	½		BTS-47K	
R58	100KΩ	½		BTS-100K	
R59	150KΩ	½		BTS-150K	
R60	5600Ω	½		BTS-5600	Note
R61	150KΩ	½		BTS-150K	
R62	10KΩ	½		BTS-10K	
R63	10KΩ	½		BTS-10K	
R64	3300Ω	½		BTS-3300	
R65	2200Ω	½		BTS-2200	
R66A	2500Ω				
B	10KΩ	50			
C	175Ω				
R67	22Ω	½		BTS-22	

Note: Some models may use 4700Ω resistor in this appli cation.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @1.23A	1080VCT .150ADC	5VAC @ 3A	6.3VCT @4.8A	T261					

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.1	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	6.4KΩ	500Ω tap ⓐ 70V SEC.2 15Ω tap ⓐ 8Ω, 4Ω	T261	A-3801	A-3130 ①				① Drill new mounting holes.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L1	.150ADC	84.5Ω	4Hy.	T509	C-1411 ①	C-3196 ①	C-15A ①	C5031 ①	20C55 ①

① Drill new mounting holes.

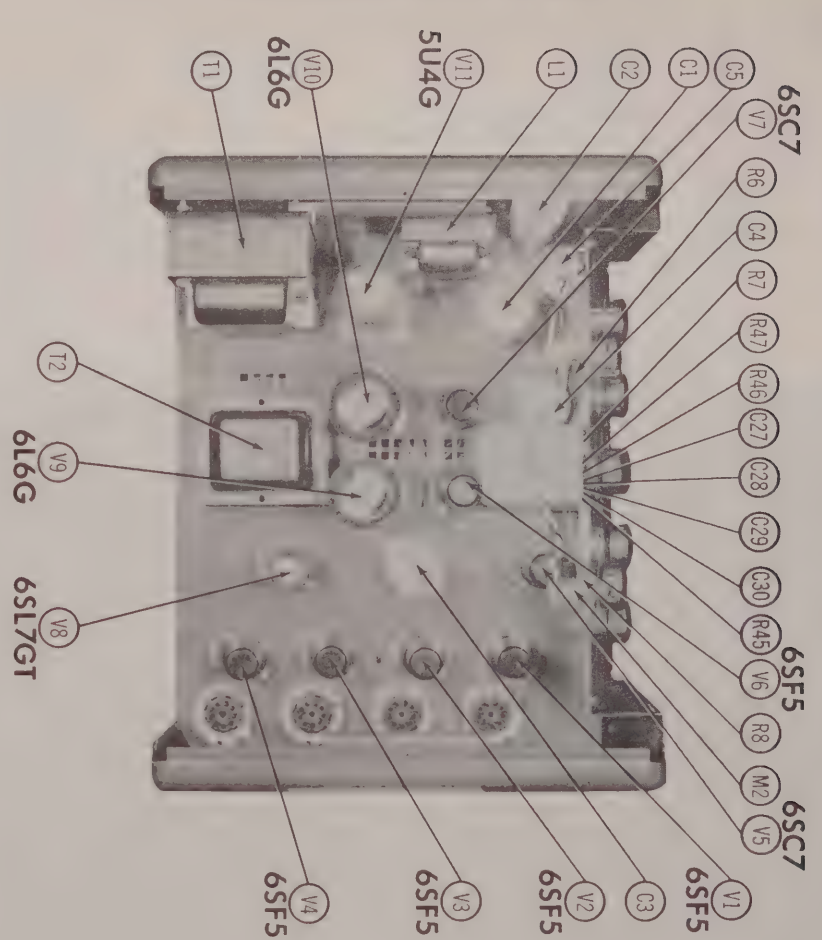
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	3.2A 125V			31303.2 (3AG S/B-3.2A)	342001	MDX 3-2/10	HKP

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M2	Dial Light		#47 (2 used)

CHASSIS—TOP VIEW



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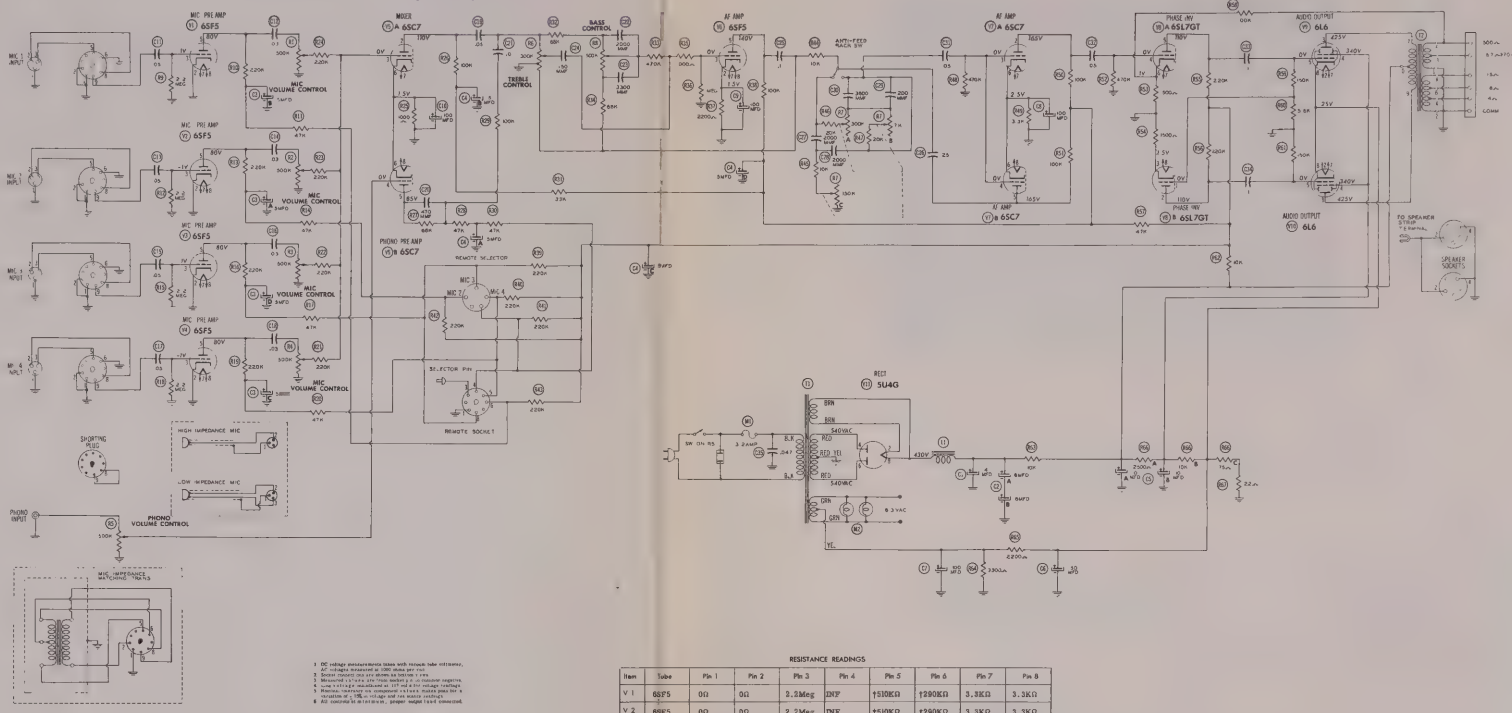

1 DC voltage measurements taken with vacuum tube voltmeter.
2 AC voltages measured at 1000 cycles per sec.
3 Socket mount tab are shown as bottom view.
4 Measured values are from socket pin to common negative.
5 Resistance measurements are taken with power off.
6 Marked resistors are component values made possible by variation of ± 10% in voltage and are nominal readings.
8 All controls in set down, proper weight load connected.

THE COOPERATION OF THE MANUFACTURERS OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SF5	0Ω	0Ω	2.2Meg	INF	†510KΩ	†290KΩ	3.3KΩ	3.3KΩ
V 2	6SF5	0Ω	0Ω	2.2Meg	INF	†510KΩ	†290KΩ	3.3KΩ	3.3KΩ
V 3	6SF5	0Ω	0Ω	2.2Meg	INF	†510KΩ	†290KΩ	3.3KΩ	3.3KΩ
V 4	6SF5	0Ω	0Ω	2.2Meg	INF	†510KΩ	†290KΩ	3.3KΩ	3.3KΩ
V 5	6SC7	0Ω	†200KΩ	55KΩ	10Ω	†200KΩ	1KΩ	3.3KΩ	3.3KΩ
V 6	6SF5	0Ω	2.2KΩ	1Meg	INF	†170KΩ	0Ω	3.3KΩ	3.3KΩ
V 7	6SC7	0Ω	†170KΩ	470KΩ	470KΩ	†170KΩ	3.3KΩ	3.3KΩ	3.3KΩ
V 8	6SL7	5.6KΩ	†240KΩ	1.5KΩ	470KΩ	†240KΩ	1.5KΩ	3.3KΩ	3.3KΩ
V 9	6L6GT	197Ω	3.3KΩ	†130Ω	†2.6KΩ	155KΩ	INF	3.3KΩ	5.5KΩ
V 10	6L6GT	197Ω	3.3KΩ	†130Ω	†2.6KΩ	150KΩ	INF	3.3KΩ	5.5KΩ
V 11	5U4G	INF	13KΩ	INF	58Ω	INF	58Ω	INF	13KΩ

† MEASURED FROM PIN 8 OF V11

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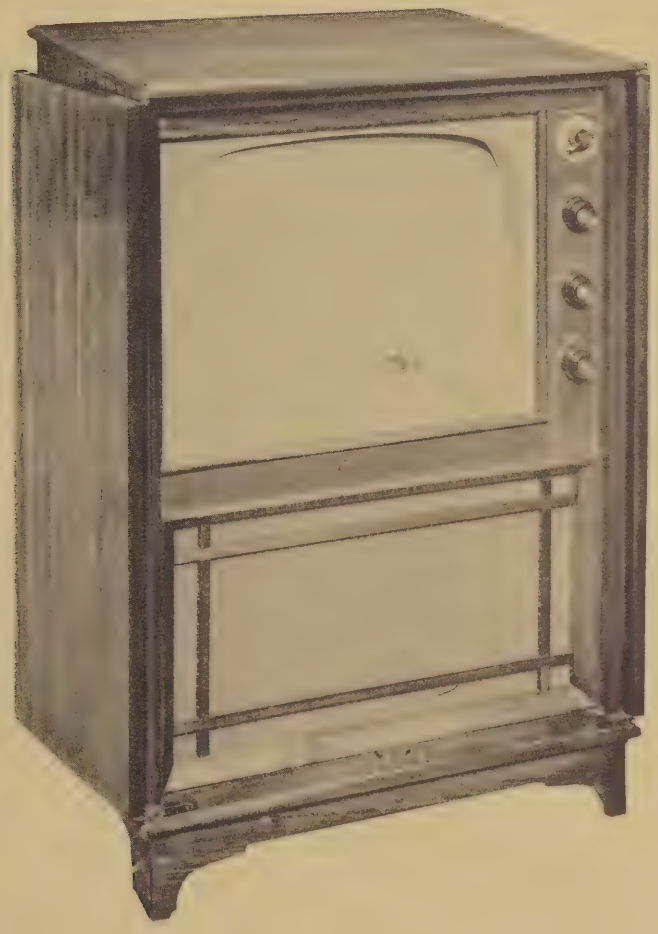

MODEL V211CD

FADA
MODELS V211CD, V213CD

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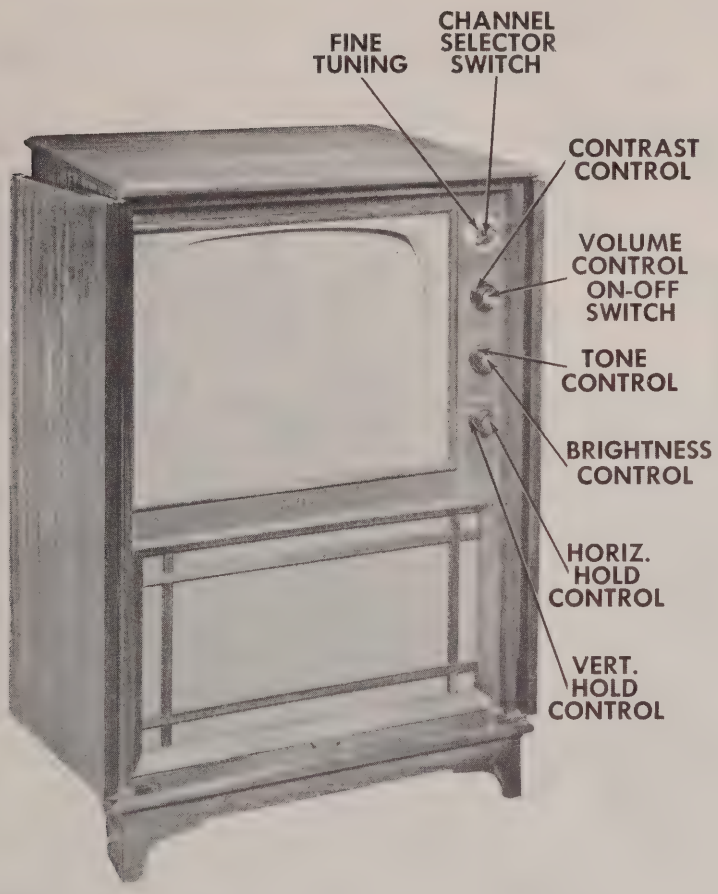

FADA MODEL V211CD

TRADE NAME	Fada Models V211CD, V213CD
MANUFACTURER	Fada Radio & Electric Co., Inc., 525 Main St., Belleville, New Jersey
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.76 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 261MC, Sound IF 21.6MC (Intercarrier)

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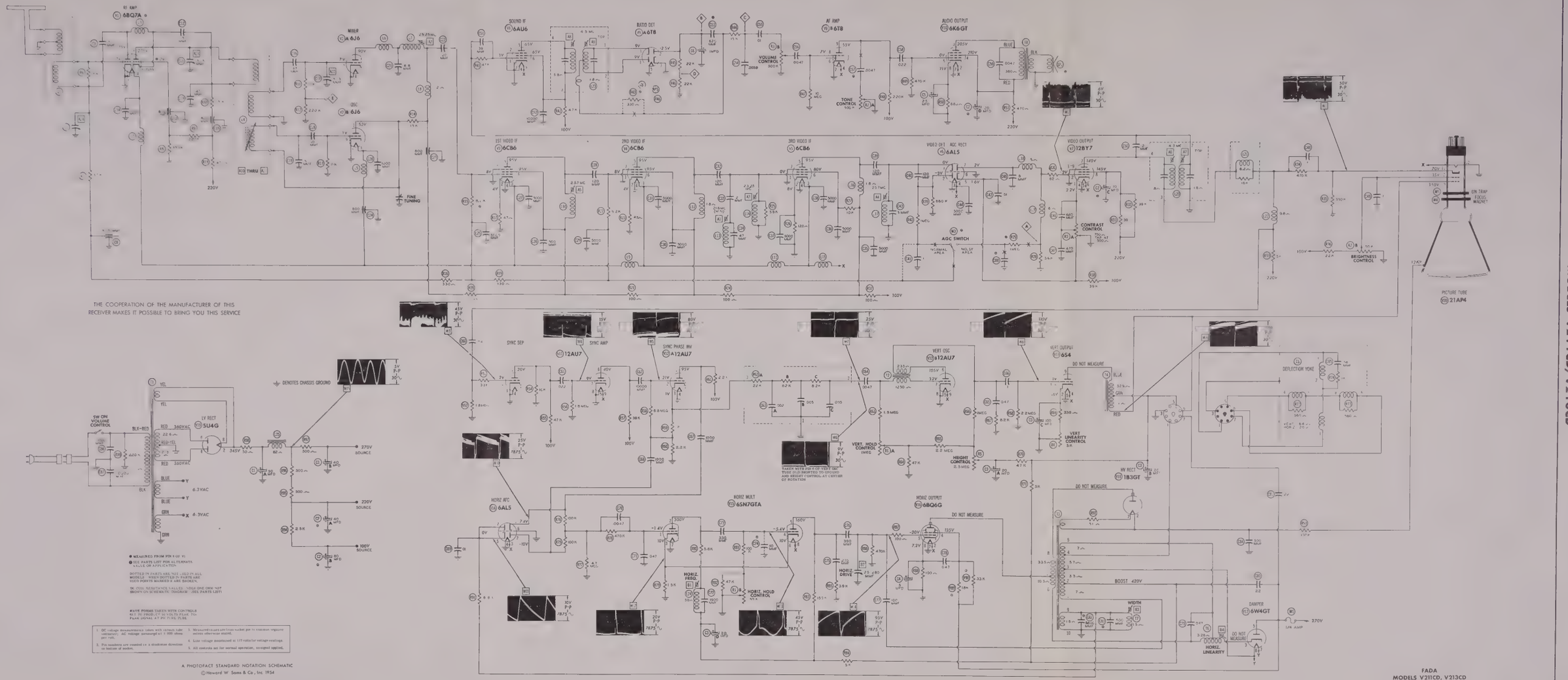
MODELS V211CD, V213CD



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CHASSIS TOP VIEW

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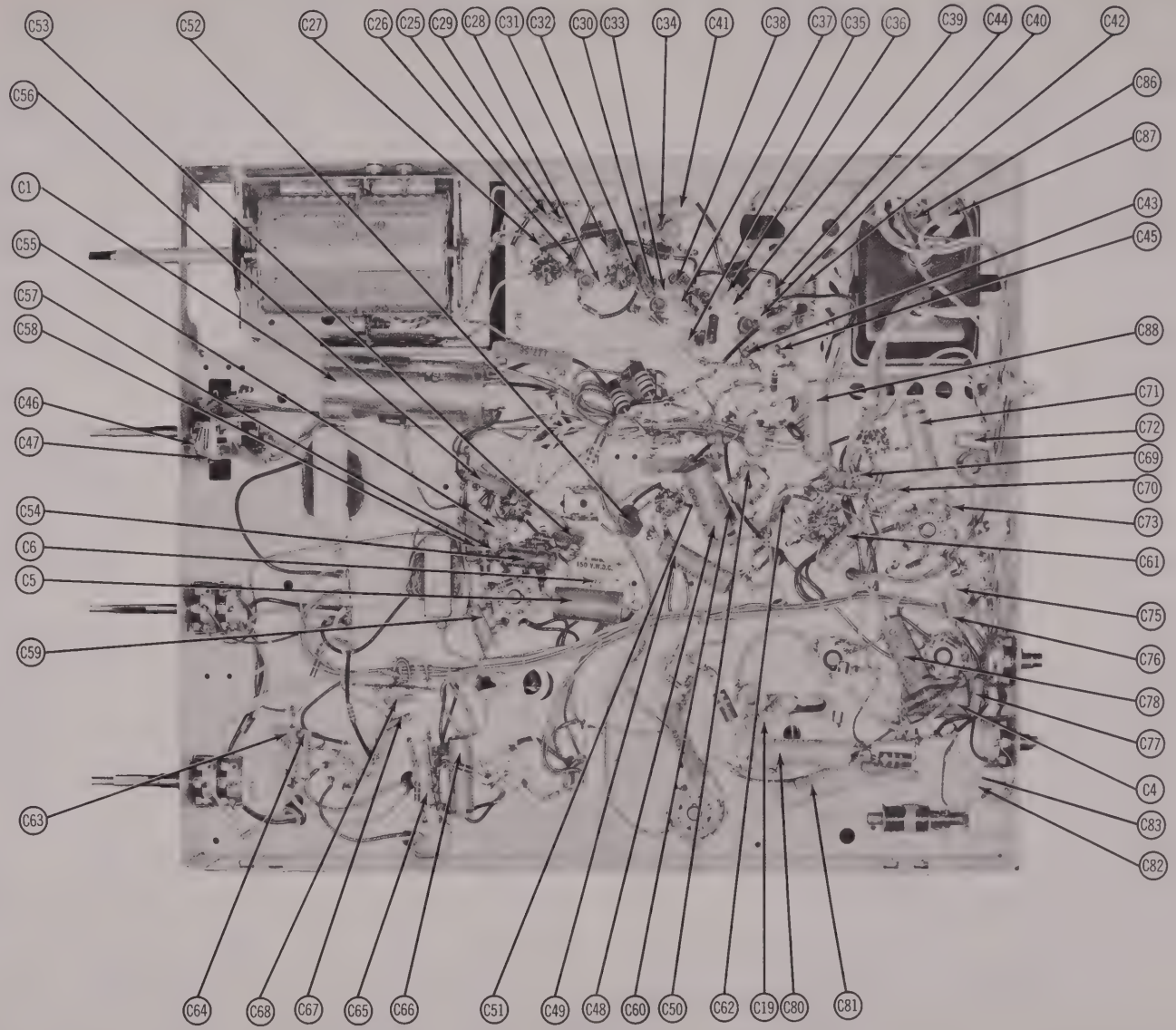

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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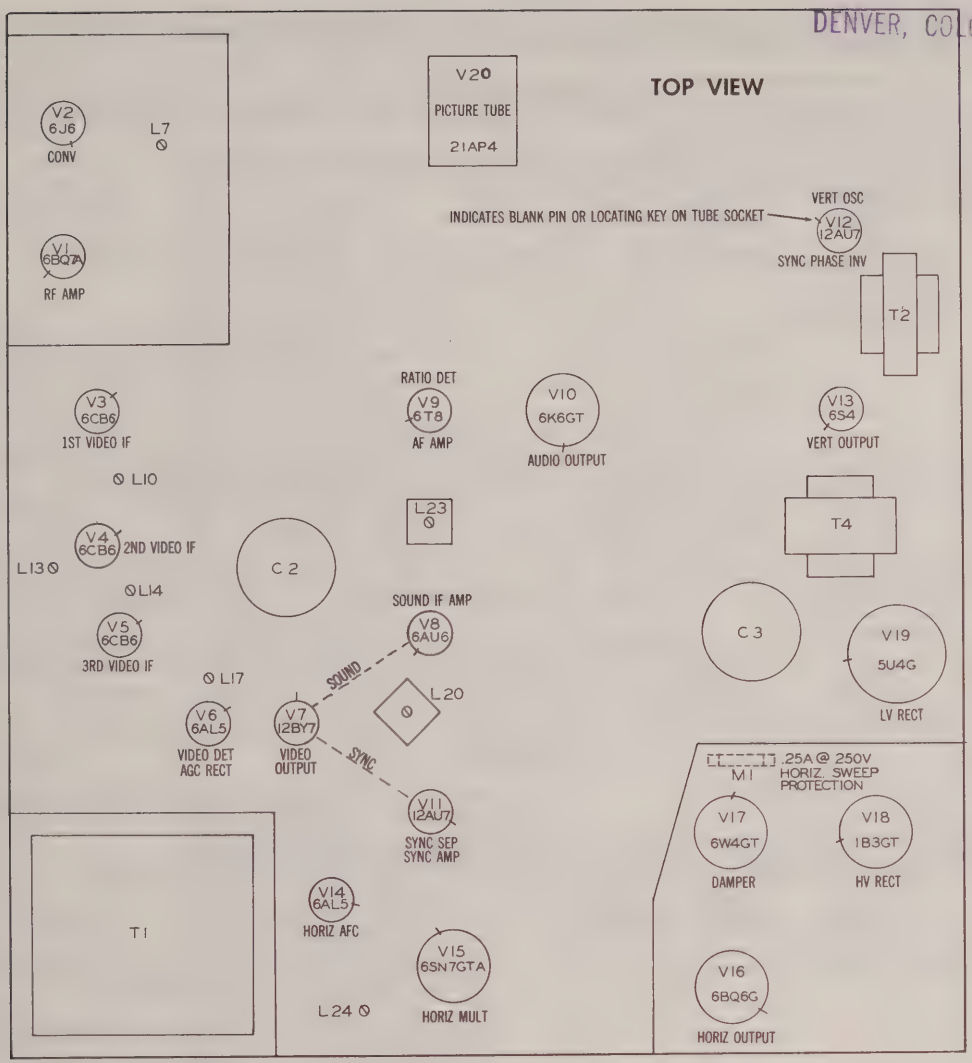
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V20
Has pic, no sound - V8, V9, V10

SYNC FAILURE
No vert. sync - V12
No horiz. sync - V12, V14, V15
No vert. or horiz. sync - V11, V12

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20, Fuse (M1)
No vertical deflection - V12, V13
Poor vert. linearity or foldover -V12, V13
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V12
Horiz. off freq. - V12, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivbrator tube (V15) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Set the contrast control to minimum contrast position.
Connect the negative lead of a 4.5 volt bias supply to the ungrounded side of C29. Connect the positive lead to chassis.
Disconnect the white wire (AGC bus) from the center terminal of the AGC switch.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to tuner chassis.	21.6MC (Unmod)	Any	DC probe thru 47KΩ to point Ⓐ. Low side to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.25MC	"	"	A2, A3	Attenuate generator output to maintain approximately 2.5 volts at VTVM. Adjust for maximum deflection.
3.	"	"	25.7MC	"	"	A4, A5	"

OVERALL VIDEO IF RESPONSE CHECK

If a separate marker generator is used connect its high side to the chassis apron near the first video IF stage. Leave the low side disconnected.
If necessary, reduce the bias from 4.5 volts to 3 volts. Use only enough sweep generator output to produce usable indication on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.6MC 22.7MC 26.1MC	Any	Vert. Amp. thru 47KΩ to point Ⓐ. Low side to chassis.		Check for response curve similar to Fig.1. If necessary, SLIGHTLY retouch A1 thru A5 to obtain desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru 47KΩ to point Ⓑ. Low side to chassis.	A6, A7, A8	Adjust for maximum deflection.
6.	"	"	"	"	DC probe thru 47KΩ to point Ⓒ. Common to point Ⓓ.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. thru 47KΩ to point Ⓑ. Low side to chassis.	A6, A7, A8	Disconnect stabilizing capacitor C6. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
6.	"	"	"	"	"	Vert. Amp. thru 47KΩ to point Ⓒ. Low side to chassis.	A9	Reconnect stabilizing capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Set contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig.2) to pin 11 (cathode) of picture tube.	A6	Retouch A6 for MINIMUM deflection.

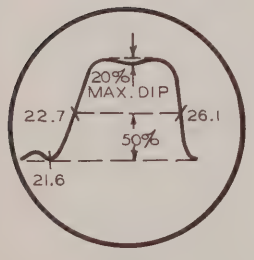


FIG. 1

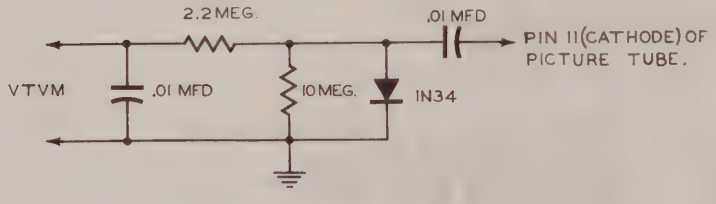


FIG. 2

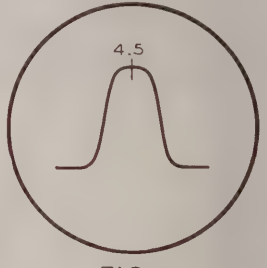


FIG. 3

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ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Leave the bias connected as under "Video IF Alignment". Reduce bias from 4.5 volts to 3 volts.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A10	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.7 5MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75 MC	2		A21	

RF AND MIXER ALIGNMENT

Leave bias connected as under "Video IF Alignment". Reduce bias from 4.5 volts to 3 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A22, A23, A24	Adjust for response curve similar to Fig. 6 with markers above 90%.
10.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		If markers fall below 70% on any channel make compromise adjustments of A22, A23 and A24 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

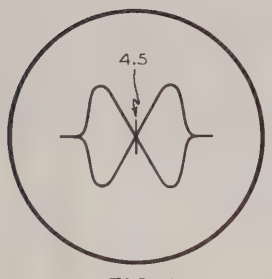


FIG. 4

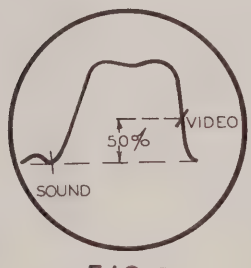


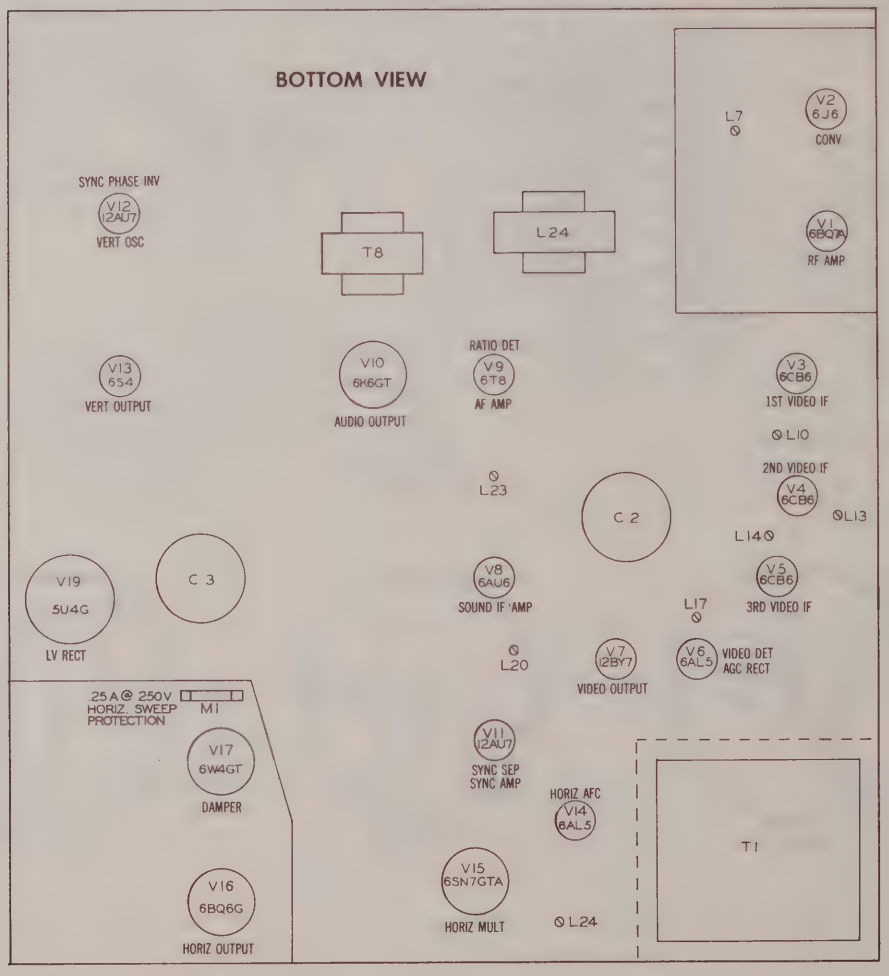
FIG. 5

FIG. 6

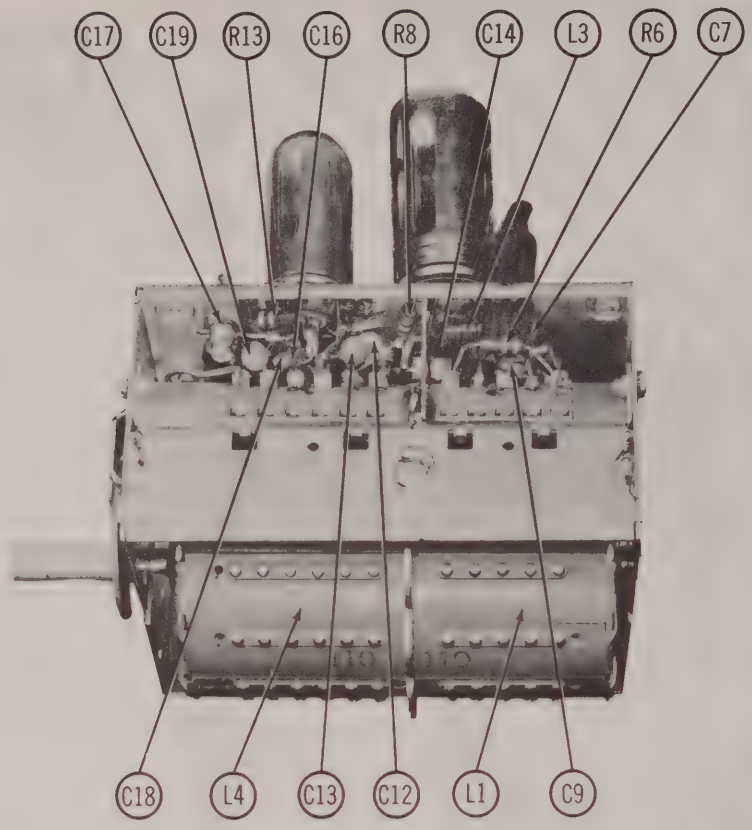
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	■1.7Meg	0Ω	.1Ω	0Ω	†3KΩ	120KΩ	INF	0Ω
V 2	6J6	†19.1KΩ	†47KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	■1.7Meg	47Ω	.1Ω	0Ω	†3.9KΩ	†3.9KΩ	0Ω		
V 4	6CB6	■1.7Meg	47Ω	.1Ω	0Ω	†3.9KΩ	†3.9KΩ	0Ω		
V 5	6CB6	.3Ω	120Ω	.1Ω	0Ω	†3.9KΩ	†13.7KΩ	0Ω		
V 6	6AL5	.3Ω	680KΩ	0Ω	.1Ω	700Ω	0Ω	5.6KΩ		
V 7	12BY7	130Ω	5.6KΩ	0Ω	0Ω	0Ω	.1Ω	†6.1KΩ	†19.1KΩ	0Ω
V 8	6AU6	47KΩ	0Ω	.1Ω	0Ω	†8.3KΩ	†8.3KΩ	0Ω		
V 9	6T8	INF	44KΩ	INF	.1Ω	0Ω	INF	44KΩ	10Meg	†220KΩ
V 10	6K6GT	INF	.1Ω	†1.9KΩ	†1.6KΩ	470KΩ	140KΩ	0Ω	680Ω	
V 11	12AU7	†25KΩ	1.8Meg	0Ω	0Ω	0Ω	†42.6KΩ	1.8Meg	0Ω	.1Ω
V 12	12AU7	†5.8KΩ	6.8Meg	3.2KΩ	0Ω	0Ω	▲2.5Meg	2.5Meg	0Ω	.1Ω
V 13	6S4	INF	1.6KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	▲7KΩ
V 14	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 15	6SN7GTA	5.2Meg	▲20.6KΩ	1.5KΩ	130KΩ	▲165KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6BQ6G	INF	.1Ω	INF	†15KΩ	470KΩ	470KΩ	0Ω	100Ω	TOP CAP ▲15Ω
V 17	6W4GT	INF	INF	150KΩ	INF	†600Ω	†600Ω	150KΩ	150KΩ	
V 18	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲350
V 19	5U4G	INF	20KΩ	INF	23Ω	INF	22Ω	INF	20KΩ	
V 20	21AP4	.1Ω	†20KΩ	PIN 10 ▲5KΩ	PIN 11 †250KΩ	PIN 12 0Ω				

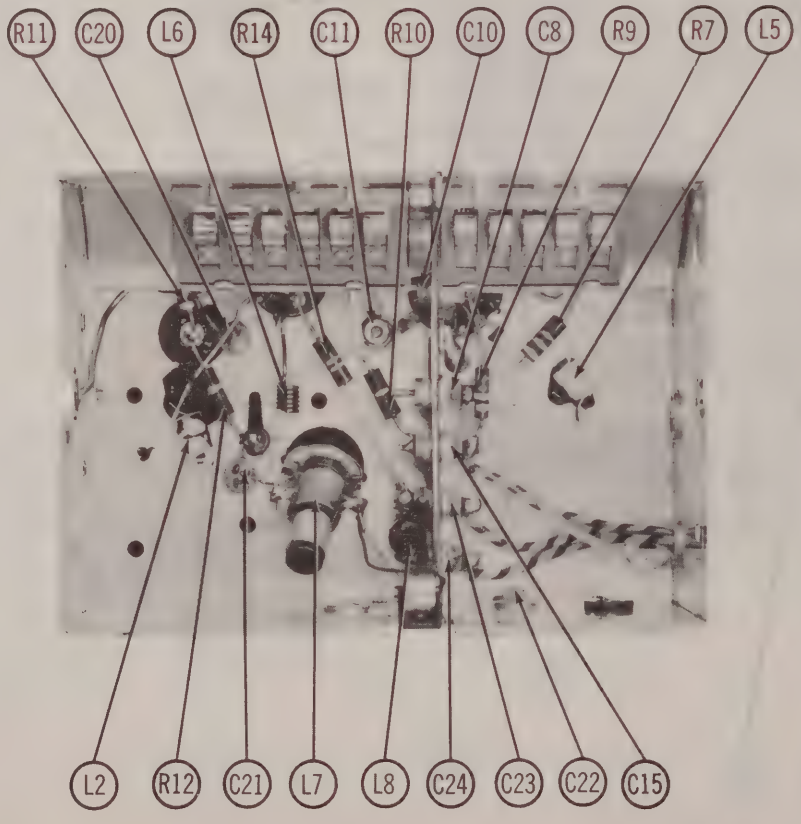
† MEASURED FROM PIN 2 OF V19
■ AGC SWITCH IN "NORMAL AREA" POSITION
▲ MEASURED FROM PIN 3 OF V17



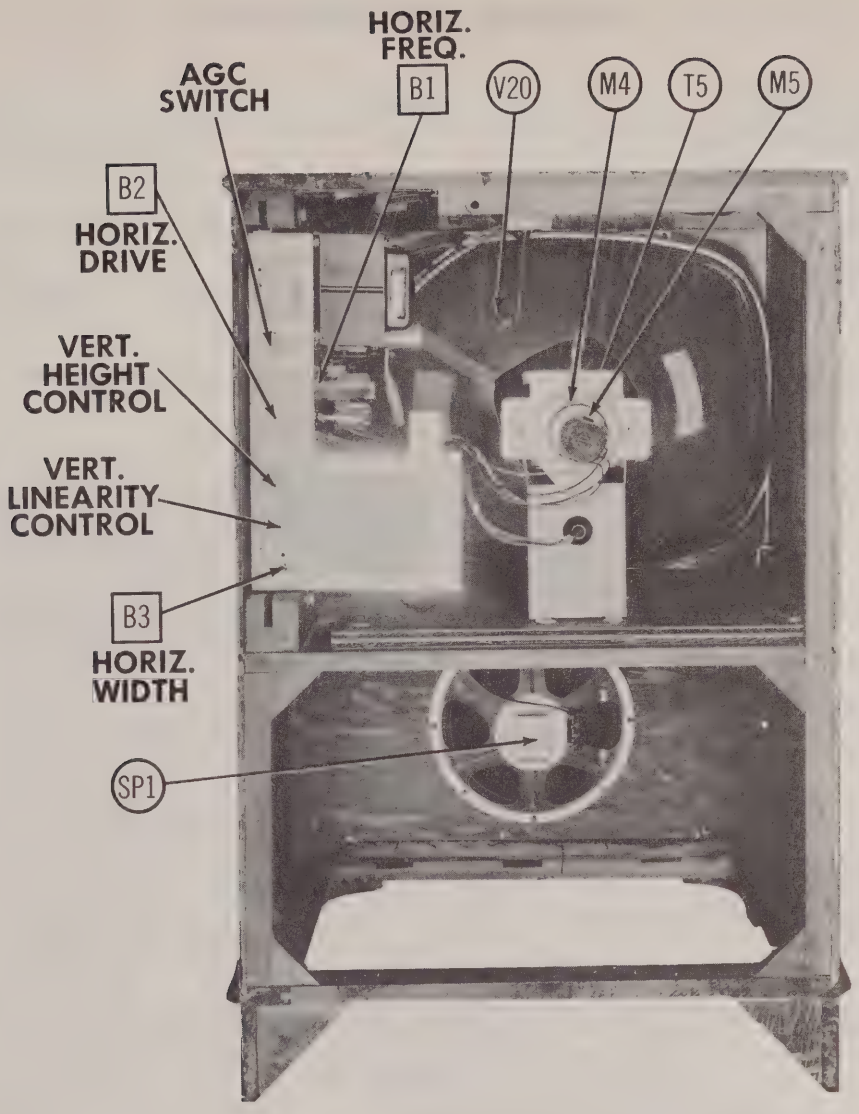
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



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CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer B2 counter clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check adjustments B2, B3 and B4. Check by substitution V16 and V17. Check R89, R90, T3, T5A and other associated components.

DRIVE LINES

Check adjustments B2 and B3. Check by substitution V16 and V17. Check C76, C4, R89, R90, T3, T5A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V16 and V17. Check B2 and B3. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V15, V16 and V17. Check C71 for open. Check T3 and T5A.

XMAS TREE EFFECT

Check by substitution V15, V16 and V17. Check T3, and T5A for internal arcing. Check C74, C73, L24, C72 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V12 and V13. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R71, C3C and other associated components.	Check T2, C66, R70, R66, R5 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check height and vertical linearity controls for proper operation. Check C3A.

COMPRESSED AT BOTTOM

Check by substitution V12 and V13. Check R5, R66, R70, C3A and other associated components.

COMPRESSED AT TOP

Check by substitution V12 and V13. Check R69, R4, C3C and other associated components.

FOLDS

Check by substitution V12 and V13. Check C65, R67, R69 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V11 and V12. Check C60, C61, C62, R55, R57, R61 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V12. Check waveform W6.

If Satisfactory	If Unsatisfactory
Check T2, C64, R63, R1A, and other associated components.	Check vertical integrator network. Check IF alignment for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V14 and V15. Check waveform W12.

If Satisfactory	If Unsatisfactory
Check L24, R80, R81, R1B, C73 and other associated components.	Check horizontal AFC network for proper operation.

HORIZONTAL BENDING

Check by substitution V11, V12, V14 and V15. Check horizontal AFC network and other associated components.

VIDEO

LOSS OF VIDEO

Substitute V7. Check R34, R31, R32, R33, L22 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check video IF alignment.

POOR CONTRAST

Substitute V7. Check contrast control, picture tube, L21 and R34. Check video IF alignment.

SMEAR

Substitute V7. Check L18, L19, L21, L22 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5, V6 and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9 and V10. Check stages V9 and V10 using audio signal generator. Apply audio signal across R3B.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C56, C58, C59, R48, R51, T8, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A9 for minimum buzz. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

MODELS V211CD, V213CD

FADA

PROPERTY OF
L. F. PLAYNSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: FADA PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	6BK7 used in some sets
V2	Converter	6J8	6J8	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	12BY7	12BY7	9BF	
V8	Sound IF Amplifier	6AU8	6AU8	7BK	
V9	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6K6GT	6K6GT	7S	
V11	Sync Sep.-Sync Amp	12AU7	12AU7	9A	
V12	Sync Phase Inv.-Vert. Oscillator	12AU7	12AU7	9A	
V13	Vert. Output	6S4	6S4	9AC	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V16	Horiz. Output	6BQ6G	6BQ6G	6AM	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: FADA PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V20	21AP4	21AP4	21AP4		21AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	475	22.79	AFH3-54		C041			FP239	TVL-3785	
B	▲40	475									
C2A	▲40	450	22.90	AFH3-46		DU5			FP378	TVL-3727	Note 1
B	▲80	350		PRS350/10					TC62	TVA-1712	Note 1
C	10	350									Note 1
D	■20	450									Note 1
C3A	▲20	450	22.81	AFH4-80		D053			FP437	TVL-4740	
B	▲20	450									
C	100	50		PRS150/4		BR550			TC30	TVA-1303	
D	■20	450									
C4	5	50	22.56	PRS150/5		BR555			TC36	TVA-1306	
C5	25	50	22.66	PRS50/25		BR145			TC40	TVA-1402	
C6	1	150	22.70	PRS150/4			3139-01-1R5				
C7	3-9				829-10						
C8	800										
C9	2.2			SI2.2NP0	TCZ-2.2	Z006	NP0K-2R2			5TCCB-V22	
C10	800										
C11	.5-3				830-3		3135-01-0R5	CT565A			
C12	1.5			SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515		5TCCB-V15	
C13	47			BPD-000047	D6-470	G033	801-470	UC-5447		5GA-Q47	
C14	1000			BPD-001	DD-102	K069	801-001	UC-521		5HK-D1	
C15	800										
C16	47			BPD-000047	D6-470	G033	801-470	UC-5447		5GA-Q47	
C17	.5-3				829-3		3135-01-0R5	CT565A			
C18	10			SI10NP0	TCZ-10	Z018	NP0K-100	ZT-561		5TCC-Q1	
C19	5										
C20	1000			BPD-001	DD-102	K069	801-001	UC-521		5HK-D1	
C21	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0K-6R8	ZT-5568		5TCCB-V68	
C22	120			BPD-00012	D6-121	G044	GP2K-121	UC-5312		5GA-T12	
C23	800										
C24	800										
C25	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C26	1500		17.45	SI500	D6-152	TP54	GP2L-152	UC-5215		5HK-D15	
C27	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C28	120		17.106	SI120	D6-121	TP35	GP2K-121	UC-5312		5GA-T12	
C29	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C30	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C31	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C32	120		17.106	SI120	D6-121	TP35	GP2K-121	UC-5312		5GA-T12	
C33	2		17.127								
C34	47		17.130	SI47NP0	TCZ-47	Z033	NP0K-470	ZT-5447		5TCC-Q47	
C35	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C36	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C37	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C38	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C39	120		17.106	SI120	D6-121	TP35	GP2K-121	UC-5312		5GA-T12	
C40	120	475	17.106	SI120	D6-121	TP35	GP2K-121	UC-5312		5GA-T12	
C41	.1	200	12.49	P288-1	DF-104	CUB2P1		PT401		2TM-P1	
C42	.01	400	12.72	P488-01	D6-103	CUB4S1	GP2-333-103	PT411		4TM-S1	
C43	3		17.131	SI3NP0	TCZ-3	Z006	NP0K-030	ZT-5533		5TCCB-V33	
C44	5000		17.44	BPD-005	DD-502	K080	811-005	DC-525		5HK-D5	
C45	5		17.79	SI5	D6-050	TP06	GP1K-050	UC-555		5GA-V5	
C46	680		17.108	SI680	D6-681	TP50	GP2K-681	UC-5368		5GA-T68	
C47	470		17.107	SI470	D6-471	TP46	GP2K-471	UC-5347		5GA-T47	
C48	.1	600	12.50	P688-1	DF-104	CUB6P1		PT601		6TM-P1	
C49	.1	400	12.75	P488-1	DF-104	CUB4P1		PT401		4TM-P1	
C50	2										
C51	39		17.105	SI39	D6-390	TP28	GP1K-390	UC-5439		5GA-Q39	
C52	10000		17.80	BPD-01	DD-103	K082	811-01	DC-511		5HK-S1	
C53	620	500	17.125			SR5T62					Note 2
C54	.0039	600	12.71	P688-004	D6-392	CUB6D4	GP2-333-392	PT624		6TM-D4	
C55	.01	400	12.72	P488-01	D6-103	CUB4S1	GP2-333-103	PT411		4TM-S1	
C56	.0047	400	12.68	P488-0047	D6-472	CUB6D47	GP2-333-472	PT6247		6TM-D47	
C57	.0047	400	12.68	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247		6TM-D47	Note 3
C58	.022	400	12.82	P488-022	DF-203	CUB4S22	817-02	PT4122		4TM-S22	
C59	.0047	400	12.68	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247		6TM-D47	
C60	.047	400	12.87	P488-047	DF-503	CUB4S47		PT4147		4TM-S47	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	FADA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	.022	400	12.82	P488-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C62	10000		17.80	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C63A	.002							PT623		
B	.005			▲PA-110	▲PC-100	▲115TM1	▲1405-0	PT625	▲V-1	
C	.005							PT625		
C64	.0047	600	12.83	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C65	.047	400	12.87	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C66	.1	600	12.75	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C67	1000		17.109	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C68	1000		17.109	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C69	.01	400	12.72	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C70	.0047	400	12.68	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C71	.047	400	12.67	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C72	3900	500	17.123	1464-004		IH5D39		MCE463	MS-24	
C73	330	500	17.69	1469-00035		SR5T33				
C74	50									Note 4
C75	270	500	17.123	1469-0003		22H5T27		MCB341	MS-33	
C76	390	500		1468-0004		SR5T39		MCB343	MS-34	
C77	100	1000	19.129							
C78	.047	600	12.66	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C79	.047	400	12.67	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C80	.22	400	12.77	P488-22		CUB4P22		PT4022	4TM-P22	
C81	.22	400	12.77	P488-22		CUB4P22		PT4022	4TM-P22	
C82	6800		17.35	SI6800	D6-682	TP66	GP2-333-682	UC-5268	5HK-D68	Note 5
C83	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	Note 5
C84	500	20000	17.166	HV20C	TV3-502	MMU20T5	413	HV20035A	20DK-T5	
C85	56	1500								
C86	10000	1000	17.136		DDI6-103				10HK-S1	
C87	10000	1000	17.136		DDI6-103				10HK-S1	
C88	.1	200	12.49	P288-1	DF-104	CUB2P1		PT401	2TM-P1	Note 3

Note 1. In some models C2A is a single unit (Part #23.82) and C2B, C2C, C2D is a triple unit (part #22.80D).
Note 2. When using ratio detector transformer part #37.230, C53 is 330MMF.
Note 3. Not used in Model V213CD.
Note 4. Not used in some versions.
Note 5. When C82 is 8200MMF, C85 is not used.
♦ Items C63A, C63B, C63C, R62A, R62B, R62C are combined in one unit.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	FADA PART No	IRC PART No	CLAROSTAT PART No	CENTRALAB PART No	MALLORY PART No	INSTALLATION NOTES
R1A	1 Meg	½	52.55	*QJ-168	RTV-110	SBB-510	UF16L	Vert. Hold-Panel
B	50KΩ	½					UR64L	Horiz. Hold-Rear
R2A	500KΩ	½	52.70	**QJ-436	RTV-401	F1-61	UF55A	Tone Panel
B	50K	½				R2-29	UR54L	Brightness-Rear
R3A	750Ω	2	52.64	■ QJ-270	RTV-109		WF75L-1	Contrast Tapped at 500Ω wire wound -Panel
B	500KΩ	½					T25L	Volume-Rear
C	Switch						UR55A	Attach to R3B
R4A	5000Ω	2	52.68	WK-5000	A43-5000	VK-135	R5000L	Vert. Linearity-Wire sound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A
R5A	2.5Meg	½	52.24	Q11-239	A47-2.5Meg-S	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-137 & P1-126 (Panel)
B11-123 & R1-212 (Rear).

** CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B13-133 & P1-126 (Panel)
B11-123 & R1-212 (Rear).

■ CONCENTRIKIT EQUIVALENT KIT K-3 BASE ELEMENTS & SHAFTS W17-105X & P4-124 (Panel)
B13-133 & R1-212 (Rear) & SWITCH 76-1.

† Universal replacement (Mallory exact duplicate Part No. UE160).
†† Universal replacement (Mallory exact duplicate Part No. UE1425).
♦ Universal replacement (Mallory exact duplicate Part No. UE22W5).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	FADA PART No.	IRC PART No.	NOTES
R6	15KΩ	½		BTS-15K	
R7	47KΩ	½		BTS-47K	
R8	330KΩ	½		BTS-330K	
R9	220KΩ	½		BTS-220K	
R10	1500Ω	½		BTS-1500	
R11	10KΩ	½		BTS-10K	
R12	220KΩ	½		BTS-220K ♦	
R13	10KΩ	½		BTS-10K	
R14	15KΩ	½		BTS-15K	
R15	9200Ω	½	32.77	BTS-9200	Note 1
R16	330Ω	½	32.67	BTS-330	
R17	47Ω	½	32.197	BTS-47	
R18	470Ω	½	32.173	BTS-470	
R19	330Ω	½	32.67	BTS 330	
R20	100Ω	½	32.2	BTS-100	
R21	100Ω	½	32.2	BTS-100	
R22	8200Ω	½	32.77	BTS-8200	
R23	47Ω	½	32.197	BTS-47	
R24	100Ω	½	32.2	BTS-100	
R25	5600Ω	½	32.126	BTS-5600	
R26	120Ω	½	32.118	BTS-120	
R27	10KΩ	½	32.11	BTS-10K	
R28	5600Ω	½	32.126	BTS-5600	
R29	1 Meg	½	32.33	BTS-1 Meg	Note 4
R30	82Ω	½	32.125	BTS-83	
R31	39KΩ	2	32.660	BTB-39K	
R32	39KΩ	2	32.660	BTB-39K	
R33	5000Ω	10	117.80		
R34	470KΩ	½	32.92	BTS-470K	
R35	330KΩ	½	32.205	BTS-330K	
R36	22KΩ	½	32.183	BTS-22K	
R37	100Ω	½	32.2	BTS-100	
R38	39KΩ	1	32.103	BTA-39K	
R39	680KΩ	½	32.35	BTS-680K	
R40	1 Meg	½	32.33	BTS-1 Meg	
R41	47KΩ	2	32.15	BTS-47K	
R42	4700Ω	1	32.74	BTA-4700	
R43	330Ω	½	32.67	BTS-330	Note 2

ITEM No.	RATING: OHMS	RATING: WATT	FADA PART No.	IRC PART No.	NOTES
R44	15KΩ	½	32.12	BTS-15K	
R45	22KΩ	½	32.13	BTS-22K	
R46	22KΩ	½	32.13	BTS-22K	
R47	10 Meg	½	32.89	BTS-10Meg	
R48	220KΩ	½	32.18	BTS-220K	
R49	470KΩ	1	32.92	BTS-470K	
R50	680Ω	1	32.115	BTA-680	
R51	470Ω	1	32.399	BTA-470	
R52	1.8Meg	½	32.308	BTS-1.8Meg	
R53	33KΩ	½	32.14	BTS-33K	
R54	10KΩ	½	32.11	BTS-10K	
R55	47KΩ	½	32.15	BTS-47K	
R56	1.8Meg	½	32.308	BTS-1.8Meg	
R57	2.2Ω	2	32.103	BTA-39K	
R58	8.8Meg	½	32.46	BTS-8.8Meg	
R59	100Ω	½	32.2	BTS-1000	
R60	2200Ω	½	32.60	BTS-2200	
R61	2200Ω	½	32.60	BTS-2200	
R62A	22KΩ	½		BTS-22K	
B	8200Ω	½	▲187.1	BTS-8200	
C	8200Ω	½		BTS-8200	
R63	1.5Meg	½	32.147	BTS-1.5Meg	
R64	47KΩ	½	32.15	BTS-47K	
R65	2.2Meg	½	32.34	BTS 2.2Meg	
R66	1.Meg	½	32.33	BTS-1 Meg	
R67	820Ω	½		BTS-820	
R68	2.2Meg	½	32.34	BTS-2.2Meg	
R69	330Ω	½	32.67	BTS-330	
R70	47KΩ	½	32.15	BTS-47K	
R71	5000Ω	10	117.80	1 3/4A-5000	
R72	560Ω	½	32.68	BTS-560	
R73	560Ω	½	32.68	BTS-560	
R74	1000Ω	½	32.8	BTS-1000	
R75	100KΩ	½	32.89	BTS-100K	
R76	100KΩ	½	32.89	BTS-100K	
R77	4.7Meg	½	32.98	BTS-4.7Meg	
R78	470KΩ	½	32.92	BTS-470K	
R79	1500Ω	½	32.265	BTS-1500	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	FADA PART No.	IRC PART No.	NOTES
R80	5800Ω	½	32.128	BTS-5600	
R81	100KΩ	½	32.89	BTS-100K	
R82	47KΩ	½	32.15	BTS-47K	
R83	150KΩ	½	32.90	BTS-150K	
R84	18KΩ	2	32.655	BTB-15K	
R85	3900Ω	½	32.202	BTS-3900	
R86	470KΩ	½	32.92	BTS-470K	
R87	100Ω	½	32.2	BTS-100	
R88	100Ω	2	32.635		
R89	18KΩ	2		BTB-18K	Note 3

ITEM No.	RATING: OHMS	RATING: WATT	FADA PART No.	IRC PART No.	NOTES
R90	33KΩ	2		BTB-33K	Note 3
R91	6800Ω	½	32.10	BTS-6800	
R92	5.1Ω	1	32.137		
R93	100KΩ	1	32.373	BTA-100K	
R94	2500Ω	25	117.83	2JD-2500	
R95	500Ω	20	117.74	2D-500	
R96	500Ω	20	117.74	2D-500	
R97	500Ω	20		2D-500	
R98	50Ω	10		1 3/4-50	
R99	220KΩ	1		BTA-220K	

Note 1. Some versions may use a 10KΩ resistor in this application
Note 2. Used only when ratio det. trans. has Part No. 37.230.
Note 3. Some versions may use a 27KΩ resistor in this application.
Note 4. Not used in Model V211CD.
♦ Items R62A, R62B, R62C, C63A, C63B, C63C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	RATING: SEC 1	RATING: SEC 2	FADA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC	700VCT	5VAC	42.61	P-8169 ①	P-3070	R-37BC	20IT10	P9719	26R21
	@ 1.76A	.220ADC	@ 3A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC	6.3VAC								
	@1.2A	@7.4A								

① Tape 6.3V @ 5A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	FADA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Vert. Osc. Trans.	42.53	A-8111	A-3000	A-95X	209T1	B6700	24A87
T3	Horiz. Output Trans.	37.272	A-8133 ♦ & WC-5 ①	HV0-9* & MWC-1②	D-19* & WC-11 ②	225T1* & 214R1 ②	FB413 *& RF800 ③	FLY-12* & WC-20 ②
T4	Vert. Output Trans.	42.62	A-8123	A-3037	A-102X	222T1	Z1804	26S52
T5A	Yoke-Horiz. (13MH)	37.273	DY-9A	MDF-72	Y-17-1	21LD2	DF602	Y-7
B	Vert. (40.5MH)							
T6B	Horiz. Linearity (1.2-5MH) (tapped)	37.244	WC-6	MWC-5 ④		209R1		WC-16 ④
T7	Width (.5-2MH)	37.248	WC-7	MWC-2 ⑤	WC-12 ⑤	206R1		WC-17

① Remove bracket and mount on side of high voltage cage.
② Drill new mounting holes.
③ Mount on side of high voltage cage.
④ Enlarge mounting hole.
⑤ Connect to coded green and red terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

	ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
	8	8	1B3 Rect. Plate Lead	1B3 Rect. Plate Lead	1B3 Rect Plate Lead	8	1B3 Rect Plate Lead
	7	7	9	9	9	7	9
	6	6	8	8	8	6	8
	5	5	NC	7	7	5	7
	4	4	5	5	5	4	5
	3	3	4	4	4	3	4
	2	2	3	3	3	2	3
	1	1	1	1	1	1	1
Connect Width Coil Across	9 & 10	Pri. WC-5 Across 1 & 2	Pri. of MWC-1 across 1 & 3	Pri. of WC-11 1 & 3	Pri. of 214R1 Across 1 & 3	Pri. of RF800 Across 1 & 2	Pri. of WC-20 Across 1 & 3
Special Notes →		⑥	⑦	⑧	⑨	⑤	5

⑥ Remove original width coil & connect secondary of replacement width coil to AFC.
If picture is out of phase, reverse secondary.
⑦ Connect cathode of damper to terminal #8. Connect linearity coil in plate circuit as shown in instruction sheet packed with unit (Do not use center-trap). Remove original width coil, C82 and C83 from circuit. Connect secondary of MWC-1 to AFC. If picture is out of phase, reverse secondary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	IMPEDANCE: SEC	FADA PART No	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No	NOTES
T8	4.5KΩ	3.3Ω	42.57	A-3877	A-2930	S-3X	Z1107	24S51	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP	FADA PART No	VIKING PART No	QUAM PART No	NOTES
SP1	10"	PM	3.3Ω	107.58 107.47 ①	16J11	10A31	① Alternate 10" PM speaker.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FADA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coils	0Ω						
L2	Fil. Choke	0Ω						
L3	Neut. Coil	0Ω						
L4	RF, Mixer Grid, & Osc. Coils	0Ω						
L5	Fil. Choke	0Ω						
L6	RF Choke	0Ω						
L7	1st Video IF	.9Ω						
L8	RF Coil	1.2Ω						
L9	Fil. Choke	0Ω		37.89	19-3001	TV-189	6175	.6 Microhenry
L10	2nd Video IF	.3Ω		37.99	17-1003	TV-102	6188 *	
L11	Fil. Choke	0Ω		37.89	19-3001	TV-189	6175	.6 Microhenry
L12	RF Choke	1.8Ω		37.197	19-1005		4612	13 Microhenries
L13	Sound Trap	0Ω		37.268	19-1021	TV-150	6171	
L14	3rd Video IF	.3Ω		37.99	17-1004	TV-112	6189 *	
L15	Fil. Choke	0Ω		37.89	19-3001	TV-189	6175	.6 Microhenry
L16	RF Choke	1.8Ω		37.197	19-1005		4612	13 Microhenries
L17	4th Video IF	.3Ω		37.99	17-1003	TV-102	6188 *	
L18	Series Peaking Coil	5Ω		37.234	19-3125		6153	120 Microhenries
L19	Shunt Peaking Coil	18Ω		37.235	19-3660	TV-188	4650	600 Microhenries
L20	Sound IF	1.8Ω	1.8Ω	37.252	16-3445 ■	TV-113	6203	
L21	Series Peaking Coil	6.2Ω		37.236	19-3180 ▲	TV-184 ▲	6180 ▲	190 Microhenries; wound on 18KΩ resistor
L22	Shunt Peaking Coil	9.8Ω		37.237	19-3250	TV-185	6181	245 Microhenries
L23	Ratio Detector	5.8Ω	1.8CT	37.253	17-3497	TV-115	6205	Tertiary winding .6Ω
L24	Horiz. Osc.	50Ω		37.233	19-1576	TV-163	6210	

✷ Enlarge mounting hole.
■ Drill mounting holes.
▲ Parallel with 18KΩ resistor.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	FADA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L25	.220A	62Ω	1.5HY	42.56	C-2325 ①	C-2996 ①	C-17X ①	C5030 ①	26C44 ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FADA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T	1/4A 250V			318.250 (1/4A-3AG-P/T)		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	FADA PART No.	NOTES
M2	Tuner	42.75	VHF
M3	Switch		AGC-used in Model V21ICD only
M4	Focus Magnet	112.38	Includes centering device
M5	Ion trap	112.23	
B2	Trimmer Capacitor	132.18	Horiz. Drive (25-280MMF)
	Cabinet		Spacify Model Number
	Knob	142.94	Outside Shaft-Vert. Hold, Tone, Contrast
	Knob	142.93	Inside Shaft-Horiz. Hold, Brightness, On-Off-Volume
	Knob	142.92	Fine Tuning
	Knob	142.91	Channel Selector
	Safety Glass	92.564	
	Mask	97.507	

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
F. [illegible] INSHIP
[illegible] MAIN ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check V19. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V19. Check B+ filter and decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V15, V16, V17 and V18. Check M1 fuse. Check waveform W14.

If Satisfactory	If Unsatisfactory
Check T3, T5A, T6, C78, R89, R90 and other associated components.	Check C76, C73, R84, R83, R80, L24 and other components associated with V15 and V16.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check components associated with V16, T3 and V19.

BLOOMING

Check by substitution V16, V17, V18 and V19. Check T3, T4A, R89, R90 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check video IF components for component failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T5 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at time, thru the small hole in the cabinet to the left of the channel selector shaft.

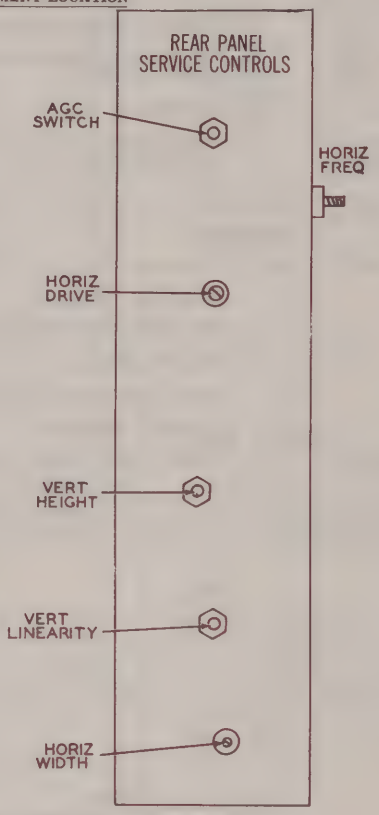
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L24) until, picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L23) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

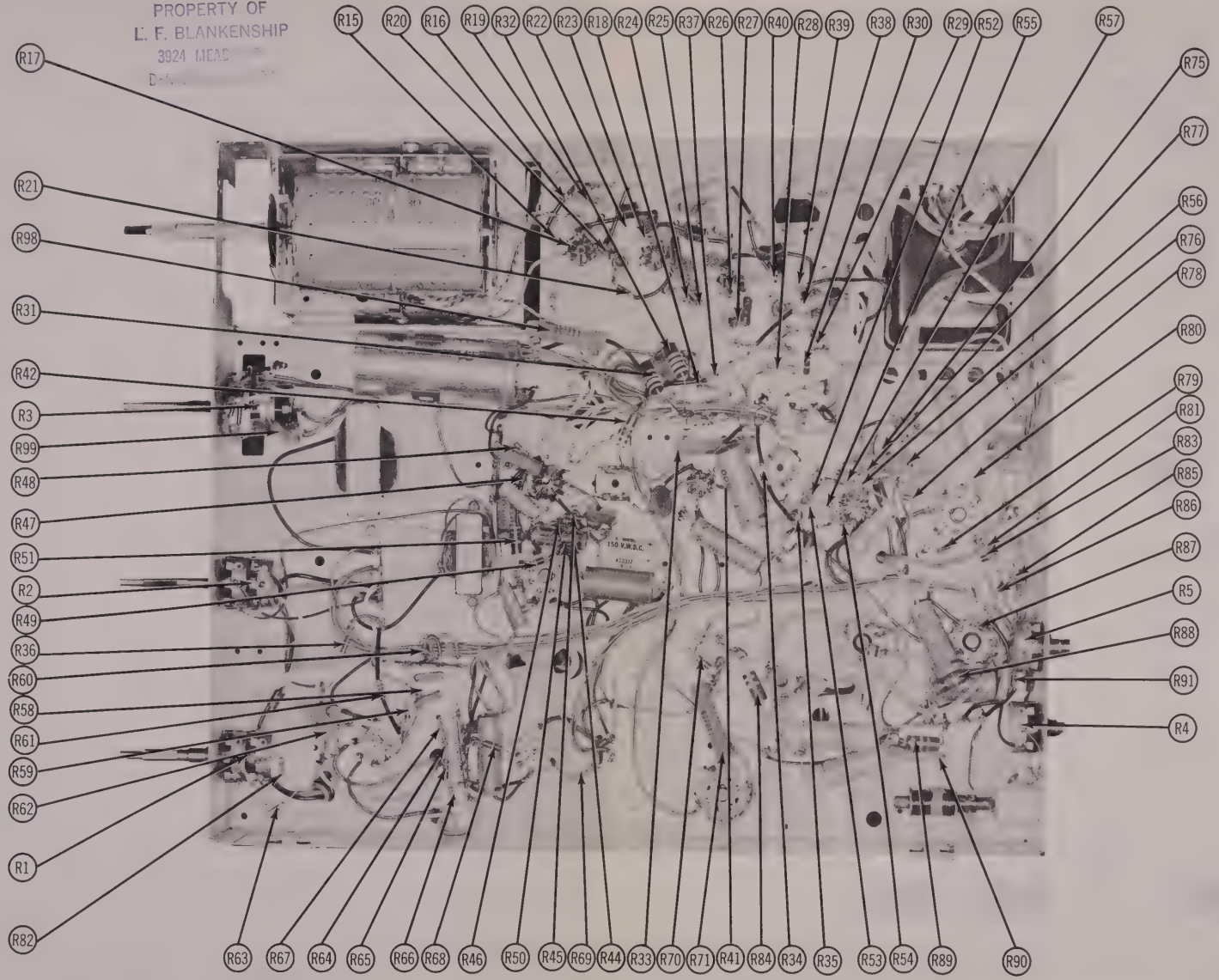
Centering is accomplished mechanically by means of a centering lever on the P, M. Focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push-on type control knobs from front of panel.
2. Remove 10 metal screws. Remove rear cover.
3. Disconnect CRT socket, yoke socket, HV lead and speaker leads.
4. Remove 2 speaker nuts. Remove speaker.
5. Remove 2 screws from antenna bracket.
6. Remove 4 chassis bolts. Remove chassis.

TO REMOVE PICTURE TUBE, REMOVE CHASSIS AND 4 BOLTS FROM MOUNTING BOARD. REMOVE PICTURE TUBE.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEAD



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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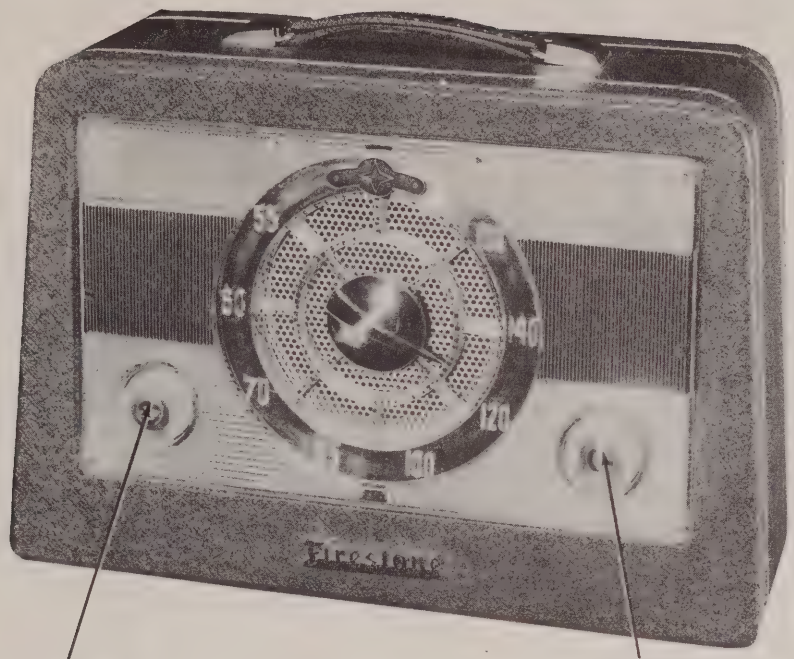
3924 [illegible]
DENVER, COLO.



FIRESTONE
MODEL 4-C-24

TRADE NAME	Firestone Model 4-C-24 (Code No. 120-4-P64U)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Five)	Types 1U4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY RATING	105-125 Volts AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply In Pack Form .12 Amp. @ 117 Volts AC (or) 60MA @ 9 Volts DC & 7.5 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	538-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	455KC (400 Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	High side to pin 6 (grid) of 1T4 or 1U4 (V1). Low side to B-.	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal	"	A7	"
5.		"	1400KC	Tune to 1400KC signal	"	A8	"
6.		"	600KC	Tune to 600KC signal	"	A9	Break coil seal on loop stick and slide coil to position where maximum output occurs. Reseal coil to loop stick.

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PARTS LIST AND DESCRIPTIONS

FIRESTONE
MODEL 4-C-24 (Code No. 120-4-P64U)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	1U4	1U4	6AR	1T4 used in some sets
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	1T4 used in some sets
V4	Det.-AVC-IF Amp.	1U5	1U5	6BW	
V5	Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	150	CE-36N	AFH4-23		D023		FP408	R1366	
B	■30	150								
C	▲25	150								
D	200	10								
C2	10	25	CE-205	PRS25/10		BR102		TC22	TVA-1204	
C3	.1	400	C104-4	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C4	12		CC120	SI12	D6-120		GP1K-120	UC-5412	5GA-Q12	
C5	.05	200	C503-2	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	100		CC101	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C7	.01	600	C103-4	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C8	220		CC201	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C9	.002	400	C204-4	P688-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C10	100		CC101	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C11	220		CC201	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C12A	50							UC-545		
B	5000		♦	♦PA-116-1	♦PC-90	♦114TM1	♦1407-01	BPD-005	♦103C3	
C	2000							DD-502		
C13	.002	400	C204-4	P688-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C14	.047	400	C1473-4	489ZX-047	DF-503	PJ4S47		PT4147	4TM-S47	
C15	.1	400	C14L							Note

Note Item C14 is a special unit, L14 is wound on C14.
♦ Items C12A, C12B, C12C, R7A, R7B and R7C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	RV-44C	Q13-137	A47-1Meg-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWE-20	Not Req.	US-27	Attach to R1A

RESISTORS

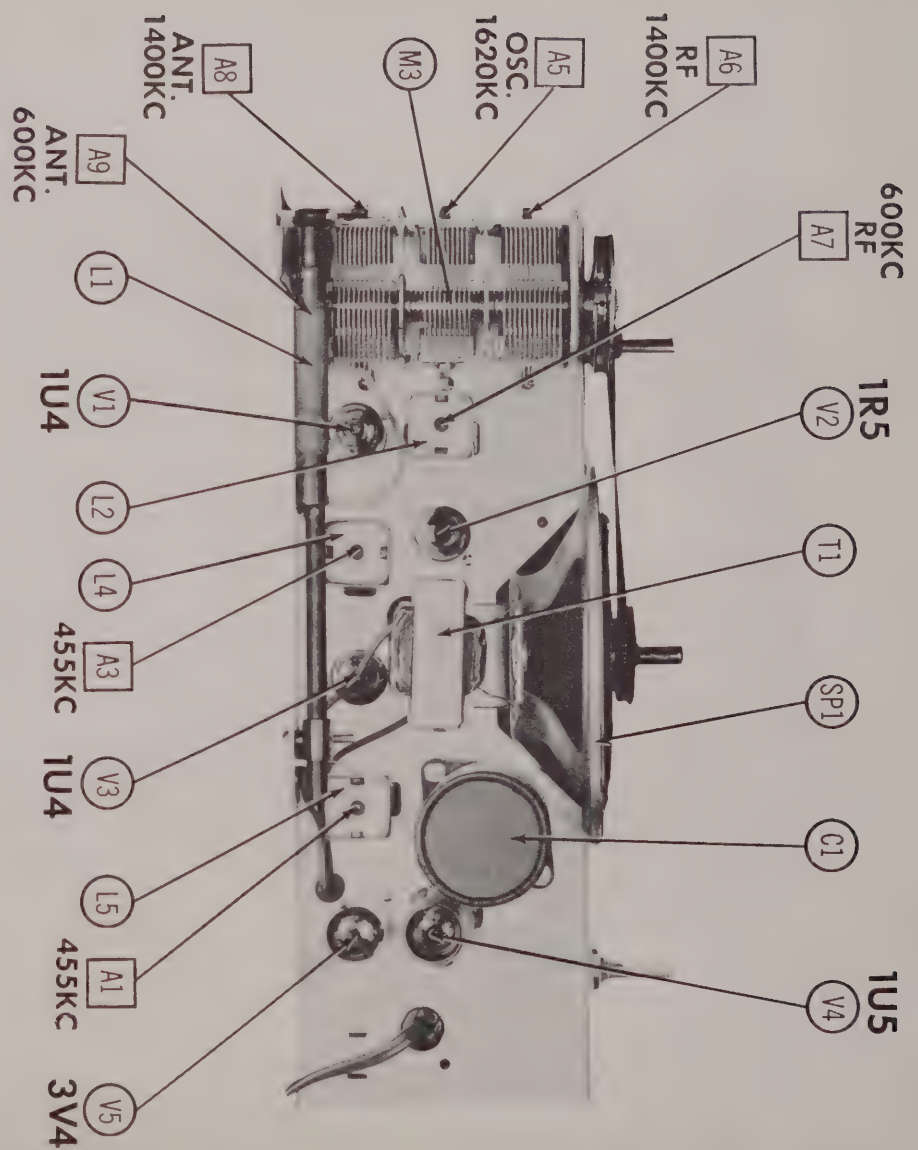
ITEM No.	RATING: OHMS	RATING: WATT	FIRESTONE PART No.	IRC PART No.	NOTES
R2	150KΩ	½	R154	BTS-150K	
R3	10 Meg	½	R106	BTS-10 Meg	
R4	10KΩ	½	R103	BTS-10K	
R5	2.2Meg	½	R225	BTS-2.2Meg	
R6	10 Meg	½	R106	BTS-10 Meg	
R7A	4.7Meg	½		BTS-4.7Meg	
B	1 Meg	½	♦	BTS-1 Meg	
C	2.2Meg	½		BTS-2.2Meg	

ITEM No.	RATING: OHMS	RATING: WATT	FIRESTONE PART No.	IRC PART No.	NOTES
R8	820Ω	½	R821	BTS-820	
R9	5.1Meg	½		BTS-5.1Meg	
R10	820Ω	½	R821	BTS-820	
R11	1500Ω	½	R152	BTS-1500	
R12	1000Ω	½	R102	BTS-1000	
R13	680Ω	1	R681-1	BTA-680	
R14	2025Ω	10	MW-2		
R15	100Ω	2	R101-2S		
R16	270KΩ	½	R274	BTS-270K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	FIRESTONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9.2KΩ	3.9Ω	Part of Speaker	A-3879 ①	A-2932 ①	S-11X ①	Z1117 ①	24S52 ①	① Bend mounting tabs down, File out slots, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.9Ω	PM-250	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.3Ω		L-A51				
L2	RF Coil	90Ω	6.5Ω	57FB-4				
L3	Osc. Coil	.8Ω	8.5Ω	L-051		BC-381 *	70-Osc. ■	
L4	Input IF	18Ω	18Ω	1655-16	16-6758	BC-352	12-C1	
L5	Output IF	18Ω	18Ω	1655-16	16-6758	BC-353	12-C2	

* Drill mounting hole.
■ Disregard tap on sec. winding.

SELENIUM RECTIFIER

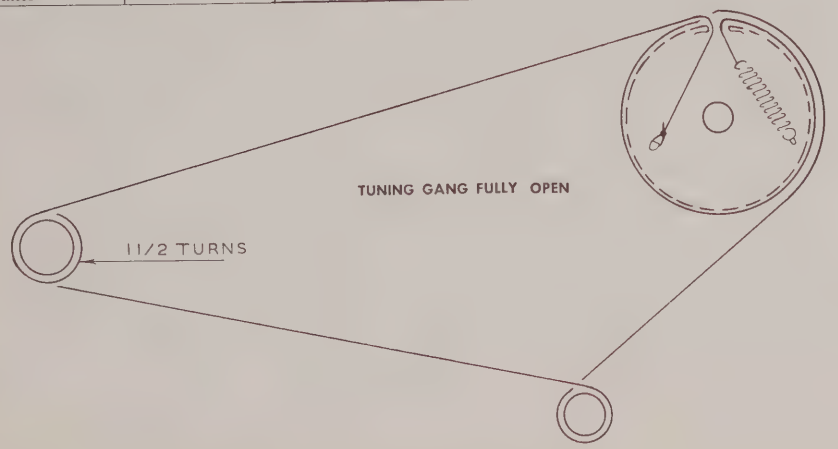
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	FIRESTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.064A	S1	1003A	RS75	6S75	75	5M4	

BATTERIES

ITEM No.	VOLTAGE	FIRESTONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A" 90V "B"	4-D-74			753			F6A60	

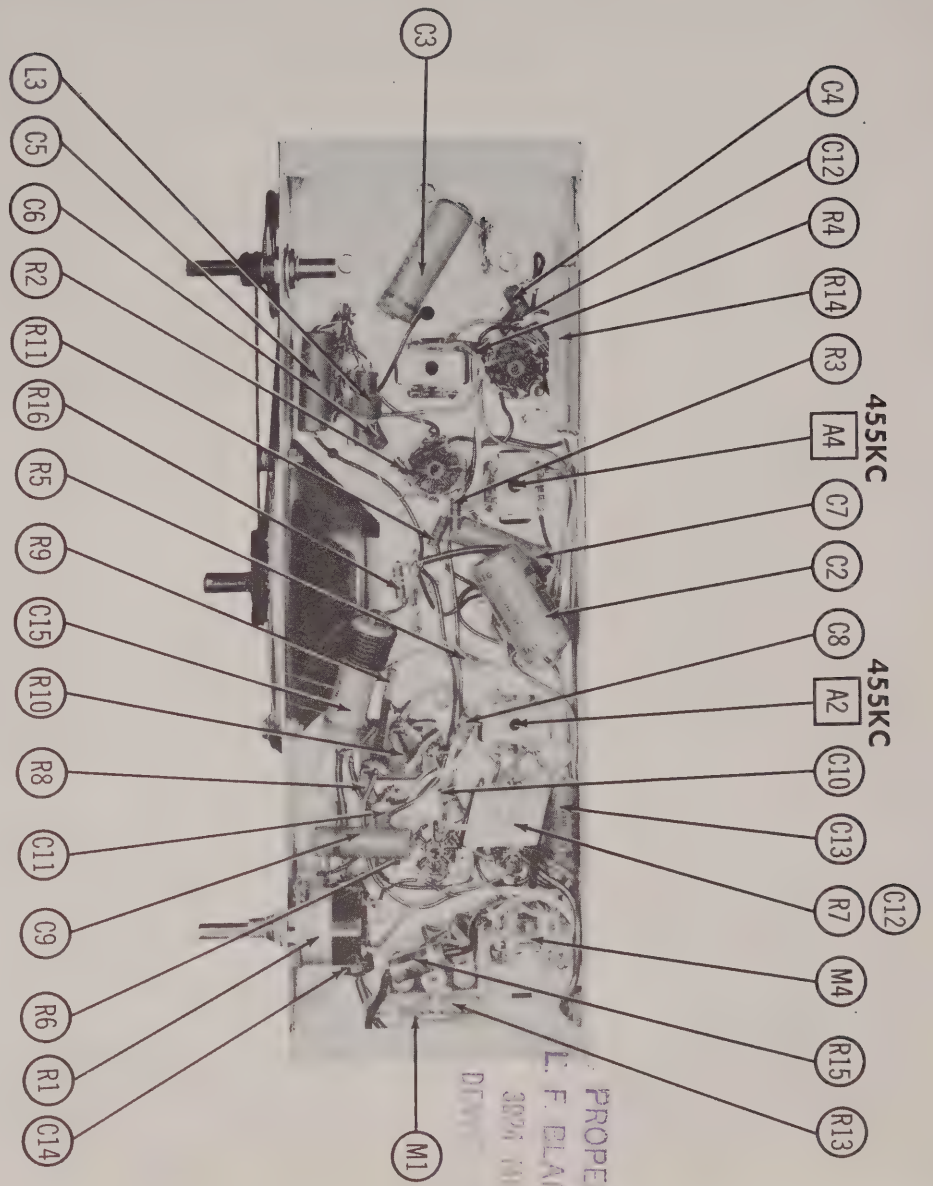
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Tuning Cap.	CV-300	37-417MMF, 18-395MMF, 30-207MMF
M4	Switch	SW-51U	Power Selector
	Cabinet	H69	Less back
	Knob	H350	Off/on - tuning
	Pointer	PS-755	



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



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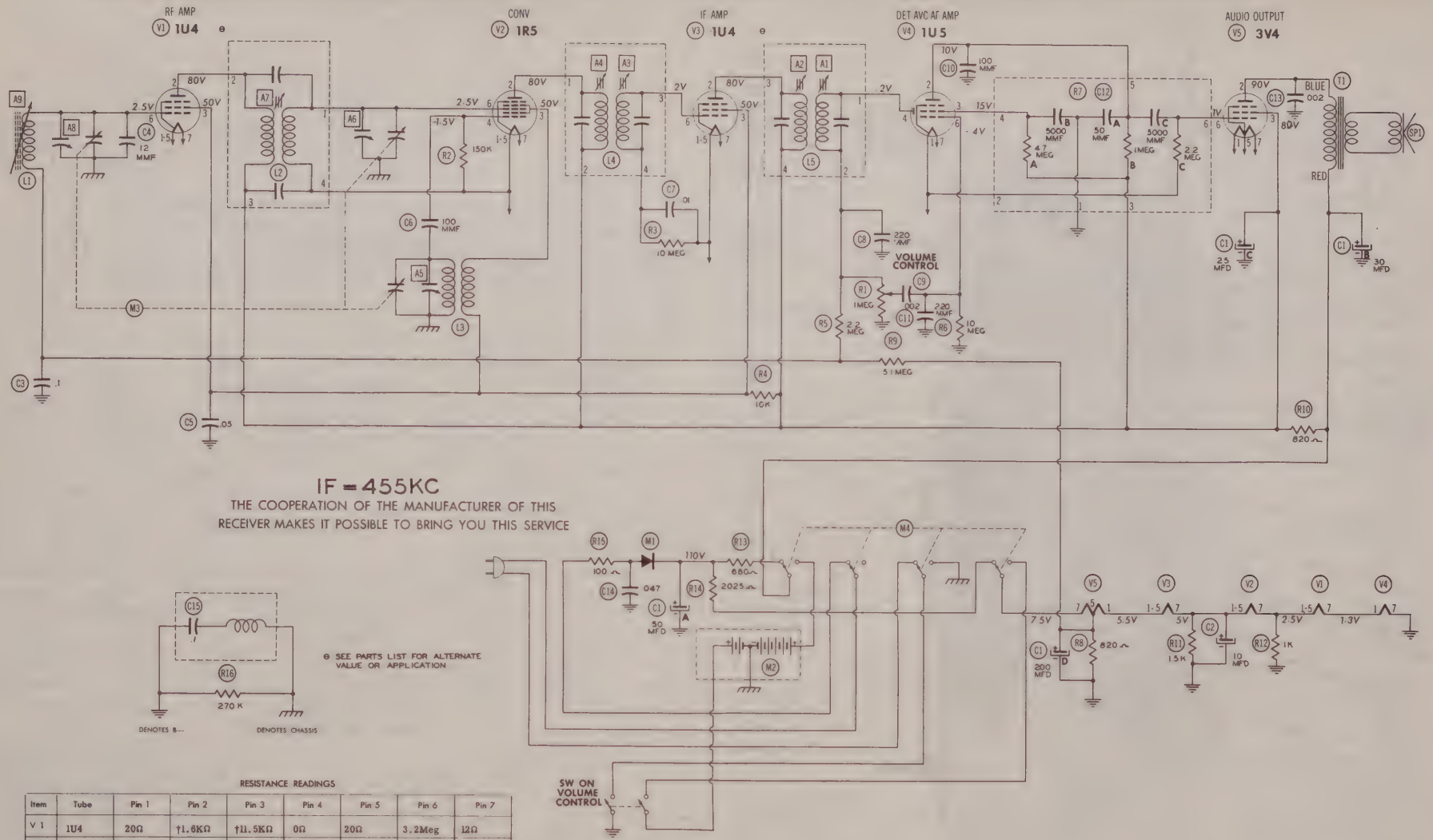
FIRESTONE
MODEL 4-C-24 (Code No. 120-4-P64U)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	20Ω	†1.6KΩ	†11.5KΩ	0Ω	20Ω	3.2Meg	12Ω
V 2	1R5	30Ω	†1.5KΩ	†11.5KΩ	150KΩ	30Ω	27Ω	20Ω
V 3	1U4	40Ω	†1.5KΩ	†11.5KΩ	0Ω	40Ω	10Meg	30Ω
V 4	1U5	12Ω	†1Meg	†4.7Meg	1Meg	INF	10Meg	0Ω
V 5	3V4	40Ω	†1.2KΩ	†1.5KΩ	0Ω	47Ω	2.2Meg	60Ω

† MEASURED FROM C1A

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Normal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

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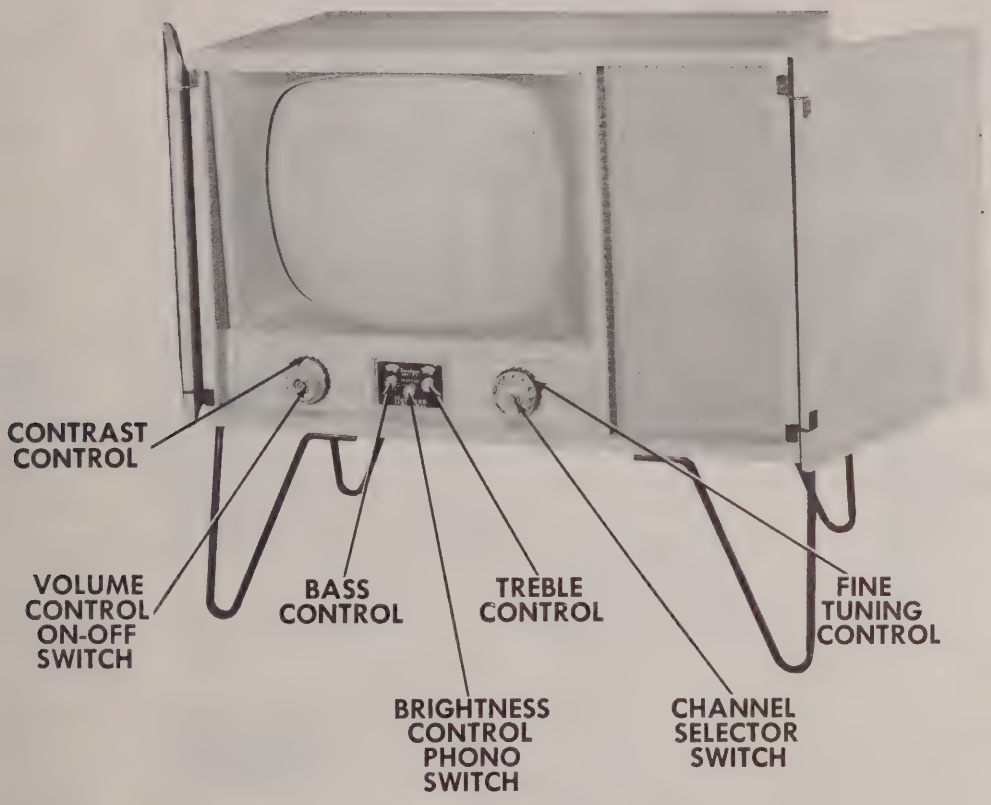

HOFFMAN MODEL 24B726

TRADE NAME	Hoffman	MODEL	CHASSIS
		24B151, 24B151U, 24M150, 24M150U, 24P152, 24P152U	402-24
		24B726, 24B726U, 24M725, 24M725U, 24P727, 24P727U	403-24
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.		
TYPE SET	Television Receiver		
TUBES	Twenty-six		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 2.6 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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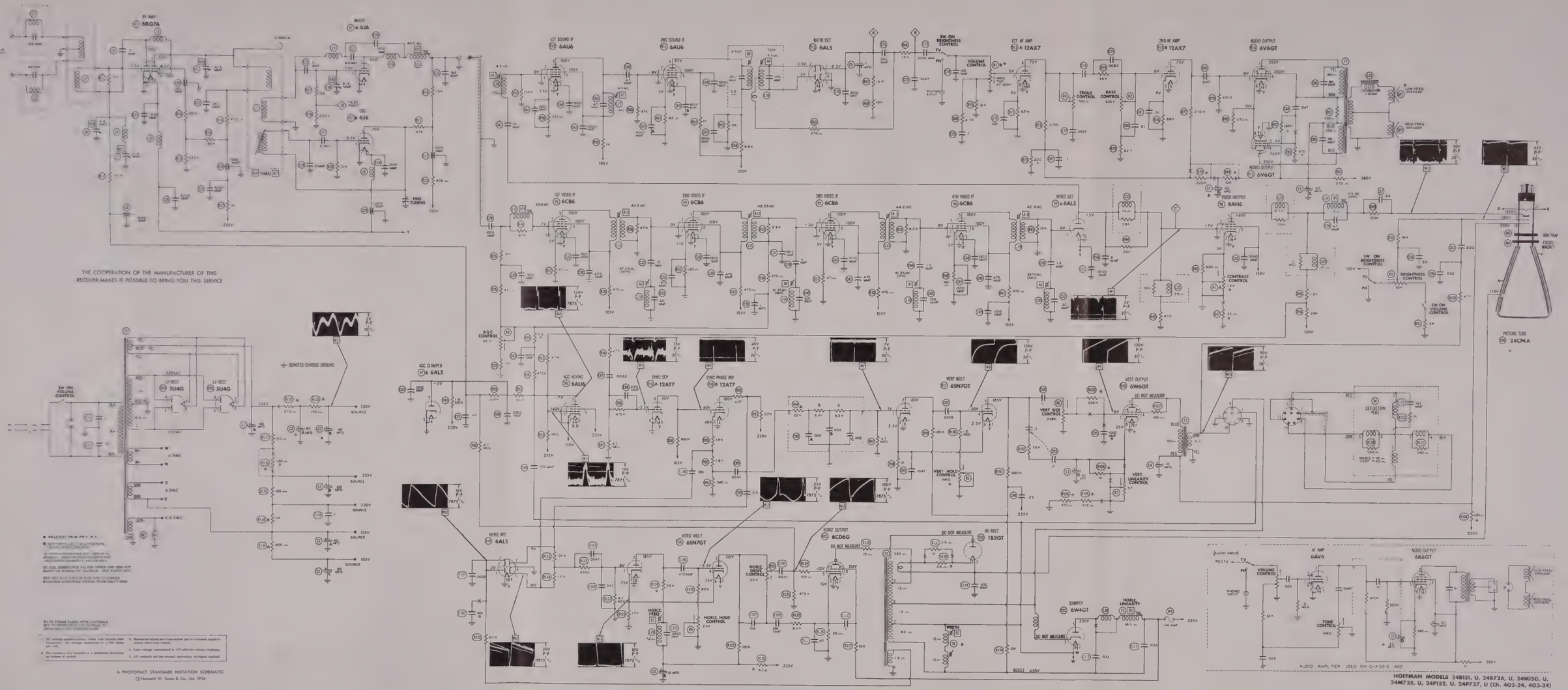

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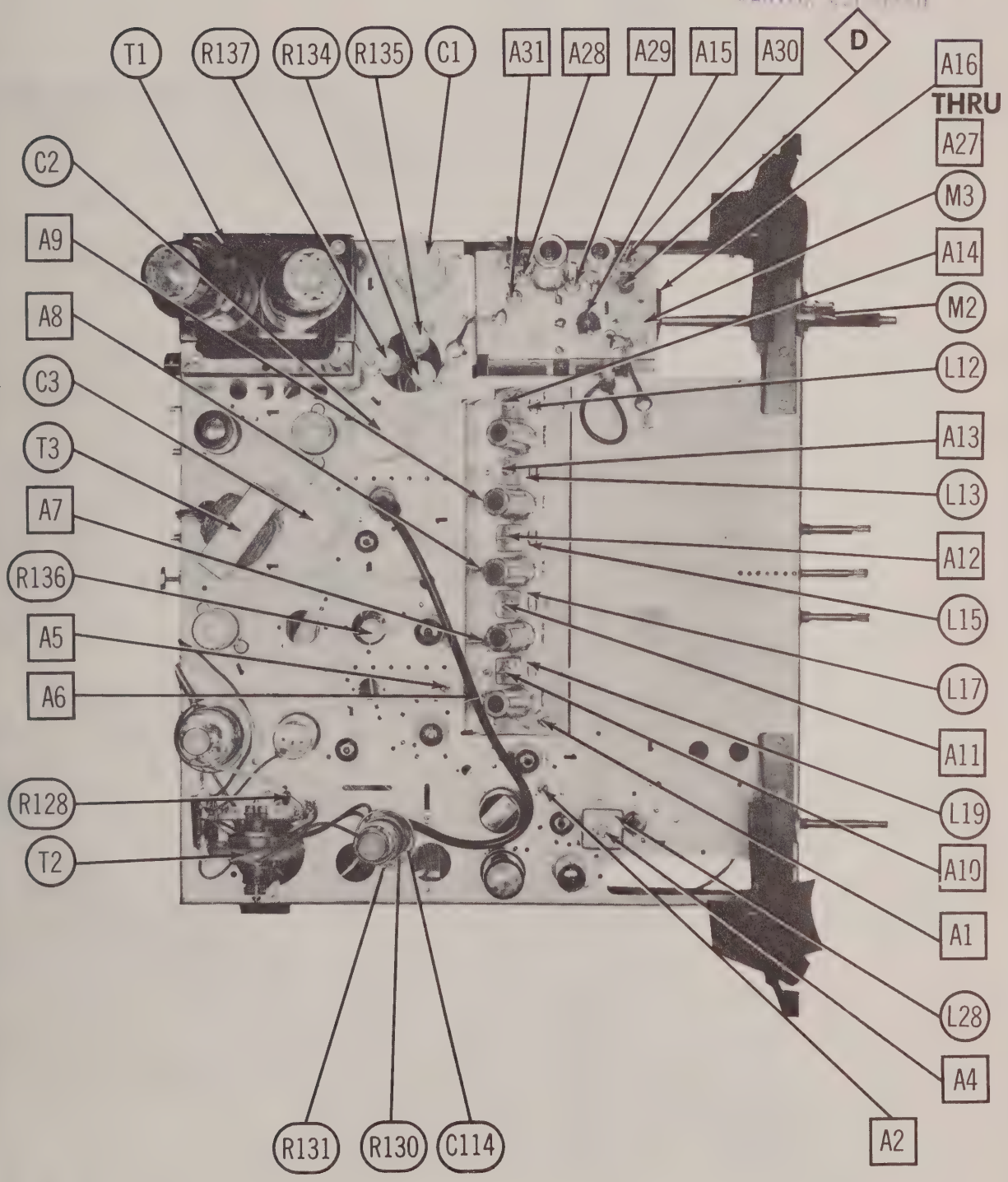

CHASSIS TOP VIEW

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CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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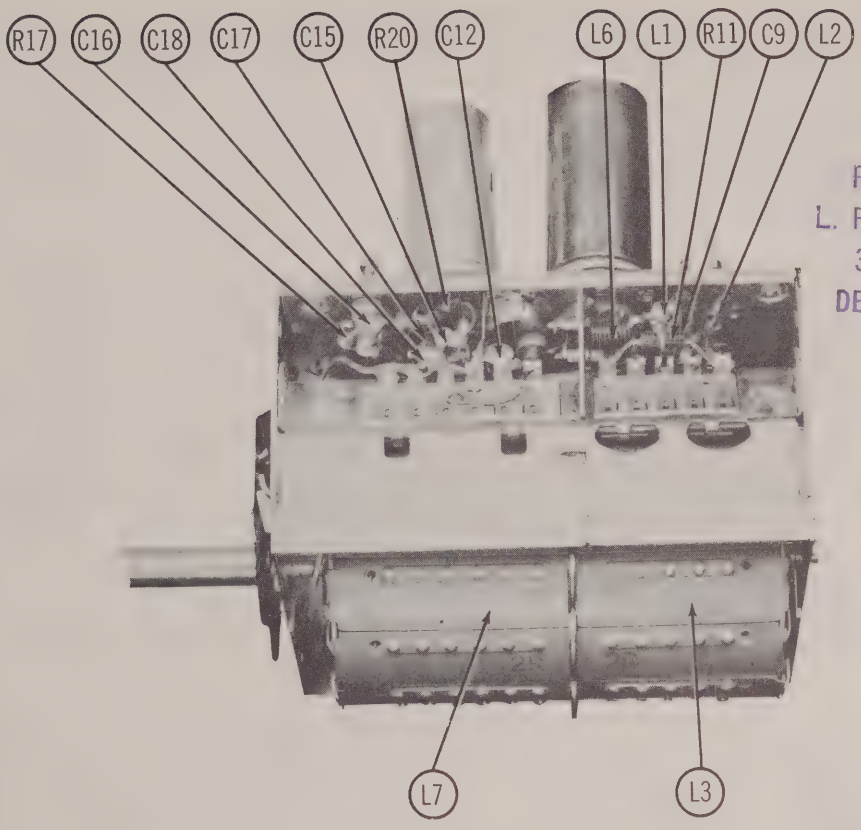

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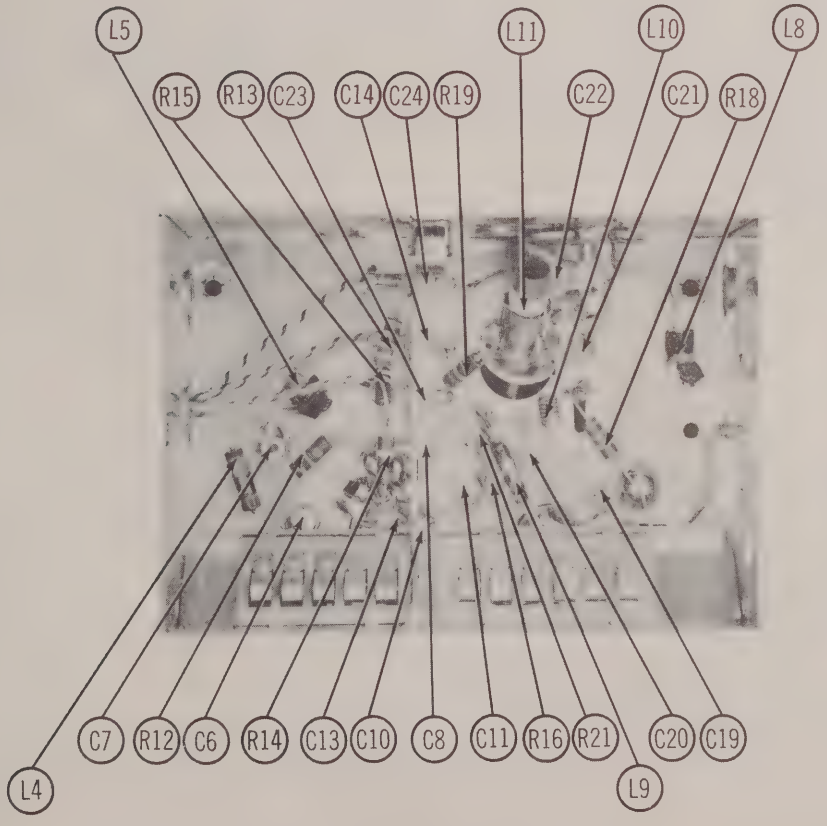
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard shock hazard may be eliminated by removing the 6CD6 (V21) from its socket or by connecting the negative lead of a 60 volt bias supply to pin 5 (grid) of 6CD6 (V21). Connect the positive lead to chassis.
Switch the tuner between channels so that the detent roller cuts on one of the high points of the drum disc. This will disable the local oscillator and reduce the possibility of erroneous indications.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6AU6 (V10). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru 10KΩ to point Ⓐ. Common to chassis.	A1, A2, A3	Attenuate generator output to maintain 4 to 7 volts at VTVM. Adjust for maximum deflection.
2.	"	"	"	"	DC probe thru 10KΩ to point Ⓑ. Common to chassis.	A4	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6AU6 (V10). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A1, A2, A3	Disconnect stabilizing capacitor C5. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point Ⓑ. Low side to chassis.	A4	Reconnect stabilizing capacitor C5. Adjust so that 4.5MC occurs at center of cross-over lines as in Fig. 2. SLIGHTLY retouch A3 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.005MFD	High side to point Ⓒ. Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig.3) to pin 11 (cathode) of picture tube. Common to chassis.	A5	Adjust for MINIMUM deflection.

VIDEO IF ALIGNMENT

Turn the contrast control fully clockwise. Connect the negative lead of a 3 volt bias battery to the ungrounded side of C27. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	39.75MC (Unmod)	Set channel between any two channels	DC probe thru 10KΩ to point Ⓒ. Common to chassis.	A6	Adjust for MINIMUM deflection.
5.	"	"	41.25MC	"	"	A7, A8	"
6.	"	"	47.25MC	"	"	A9	"
7.	"	"	42.5MC	"	"	A10	Attenuate generator output to maintain 1 volt at VTVM. Adjust for maximum deflection.
8.	"	"	44.2MC	"	"	A11	"
9.	"	"	42.25MC	"	"	A12	"
10.	"	"	45.5MC	"	"	A13	"
11.	"	"	43.0MC	"	"	A15	Adjust for MINIMUM deflection.
12.	"	"	43.0MC	"	"	A14	Adjust for maximum deflection. Attenuate generator output to maintain 1 volt at VTVM.
13.	"	"	45.0MC	"	"	A15	Adjust for maximum deflection. Repeat steps 4 thru 13 until no further improvement is noted.

FIG. 1

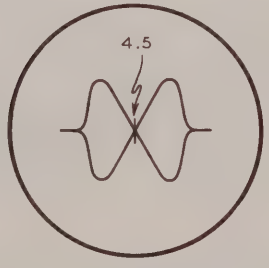


FIG. 2

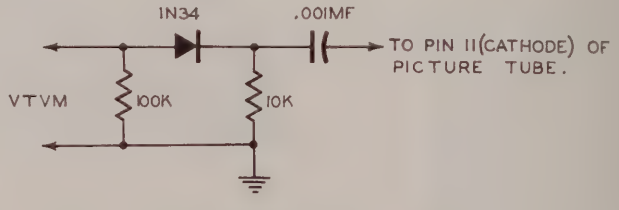


FIG. 3

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ALIGNMENT INSTRUCTIONS (cont)

OVERALL VIDEO IF RESPONSE CHECK

Connect a .001MFD capacitor across the vertical input terminals of scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Direct	High side to an ungrounded tube shield floating over converter tube (V2). Low side to chassis.	44MC (10MC Swp)	39.75MC 41.25MC 42.0MC 45.75MC 47.25MC	Set Channel Selector between any two channels	Vert. Amp. thru 10KΩ to point Ⓒ. Low side to chassis.		Check for response curve similar to Fig. 4. Use high scope gain and sweep generator output and remove bias battery to view 39.75MC, 41.25MC and 47.25MC markers. If necessary, retouch A6 thru A13 to obtain desired response. It should not be necessary to retouch A14 and A15. A13 positions the 45.75MC marker and A12 the 42.0MC marker. A10 and A11 affect tilt.

VHF OSCILLATOR ALIGNMENT

Restore converter tube (V2) shield to its original position.
The VHF channel oscillator adjustment screws are reached thru a hole just to the right of the channel switch shaft. This hole extends thru the UHF tuner when adjusting the VHF channel oscillator circuits. The correct VHF channel oscillator adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Leave bias connected as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point Ⓒ. Low side to chassis.	A16	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A17	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A18	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A19	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A20	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A21	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A22	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A23	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A24	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A25	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A26	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A27	

VHF RF AND MIXER ALIGNMENT

Leave bias connected as under "VHF oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscillsocope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point Ⓓ. Low side to chassis.	A28 A29 A30	Adjust for response curve similar to Fig. 6 with markers above 90%.
17.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		If markers fall below 70% on any channel make compromise adjustments of A28, A29 and A30 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

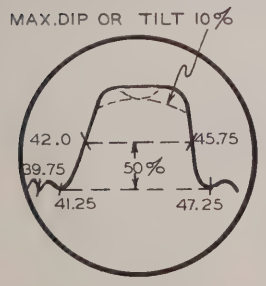


FIG. 4

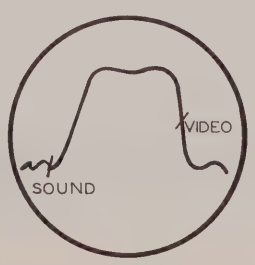


FIG. 5

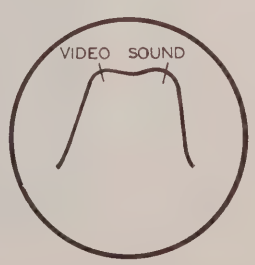


FIG. 6

HOFFMAN MODELS 24B151, U, 24B726, U, 24M150, U, 24M725, U, 24P152, U, 24P727, U (Ch. 402-24, 403-24)

ALIGNMENT INSTRUCTIONS (cont)

44MC TRAP ALIGNMENT

Adjust the 44MC trap trimmer, A31, for minimum interference on channel 2.

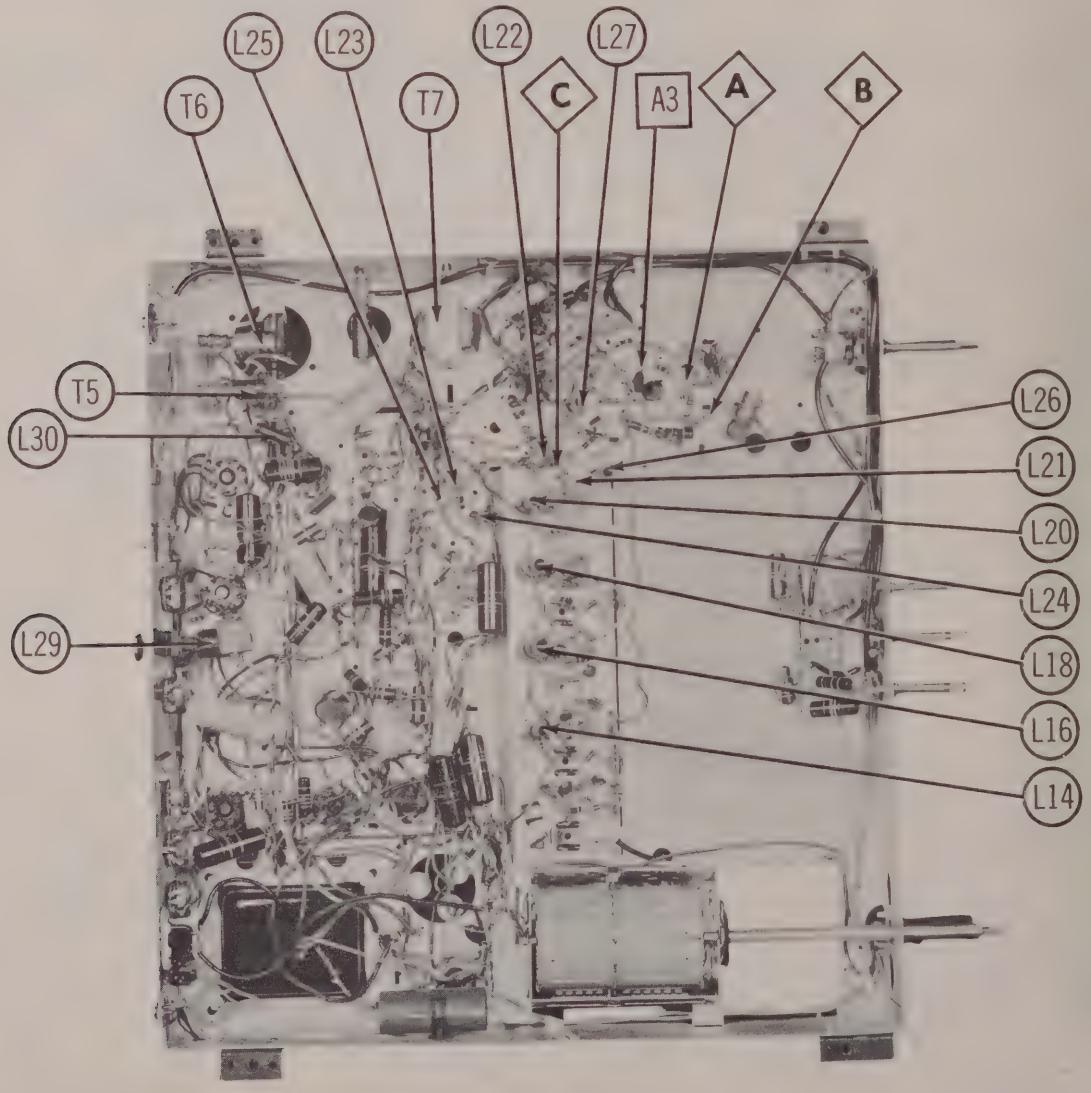
UHF OSCILLATOR ALIGNMENT

Switch tuner to UHF position and remove the tuner knobs. The UHF channel oscillator screws are reached thru the same hole used for VHF oscillator alignment. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Leave the bias battery connected as under "VHF oscillator alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	473MC (10MC Swp)	471.25MC 475.75MC	14	Vert. Amp. thru 10KΩ to point Ⓒ. Low side to chassis.	A31	Adjust to place sound marker in trap notch as in Fig. 5. the video marker should be at 50%.
19.	"	"	515MC (10MC Swp)	513.25MC 517.75MC	21	"	A32	"
			575MC (10MC Swp)	575.25MC 577.75MC	31		A33	
			635MC (10MC Swp)	633.25MC 657.75MC	41		A34	
			695MC (10MC Swp)	693.25MC 697.75MC	51		A35	
			755MC (10MC Swp)	753.25MC 757.75MC	61		A36	
			815MC (10MC Swp)	813.25MC 817.75MC	71		A37	
			875MC (10MC Swp)	873.25MC 879.75MC	81		A38	

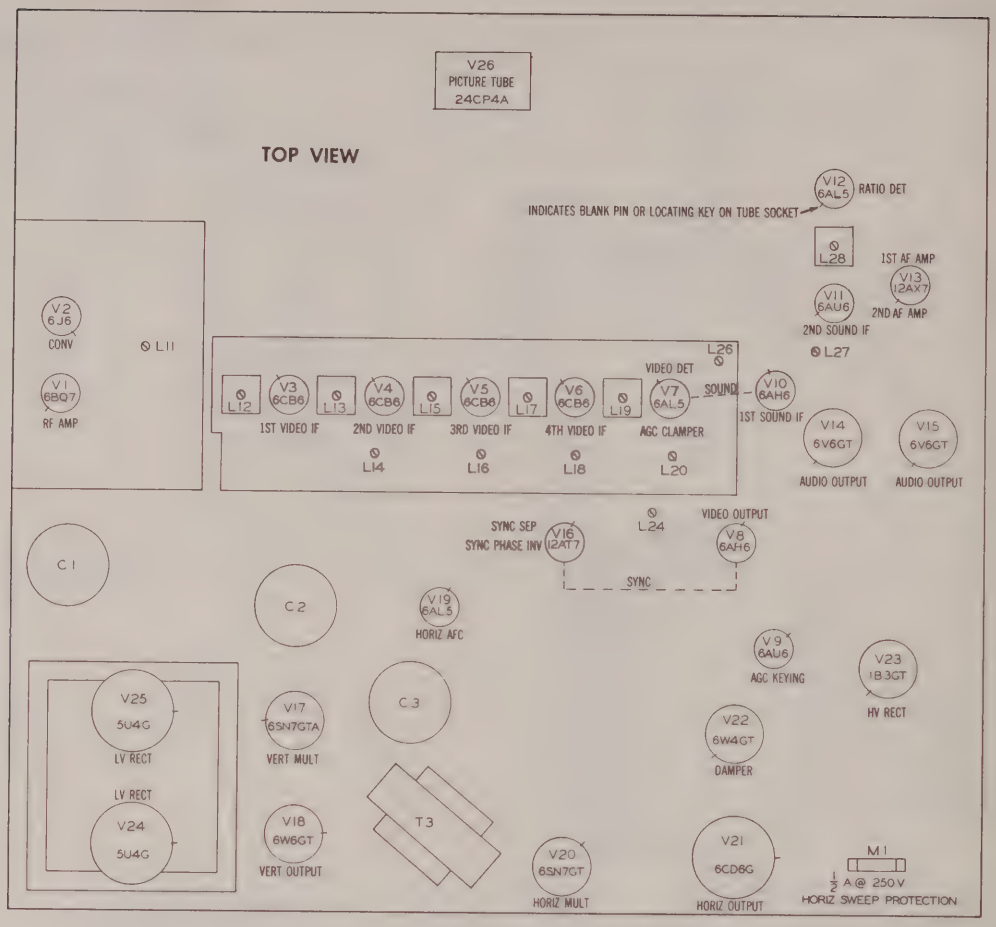
UHF RF AND MIXER ALIGNMENT

The UHF RF and Mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V24, V25

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V8, V9, V26
Has pic, no sound - V10, V11, V12, V13, V14, V15
Overloaded picture - V9

SYNC FAILURE
No vert. sync - V16, V17
No horiz. sync - V16, V19, V20
No vert. or horiz. sync - V16

SWEEP FAILURE
No raster, has sound - V20, V21, V22, V23, V26 Fuse (M1)
No vertical deflection - V17, V18
Poor vert. linearity or foldover - V17, V18
Poor horiz. linearity or foldover - V20, V21, V22
Narrow picture - V20, V21, V22, V23, V24, V25
Vert. off freq. - V16, V17
Horiz. off freq. - V16, V19, V20

RESISTANCE MEASUREMENTS

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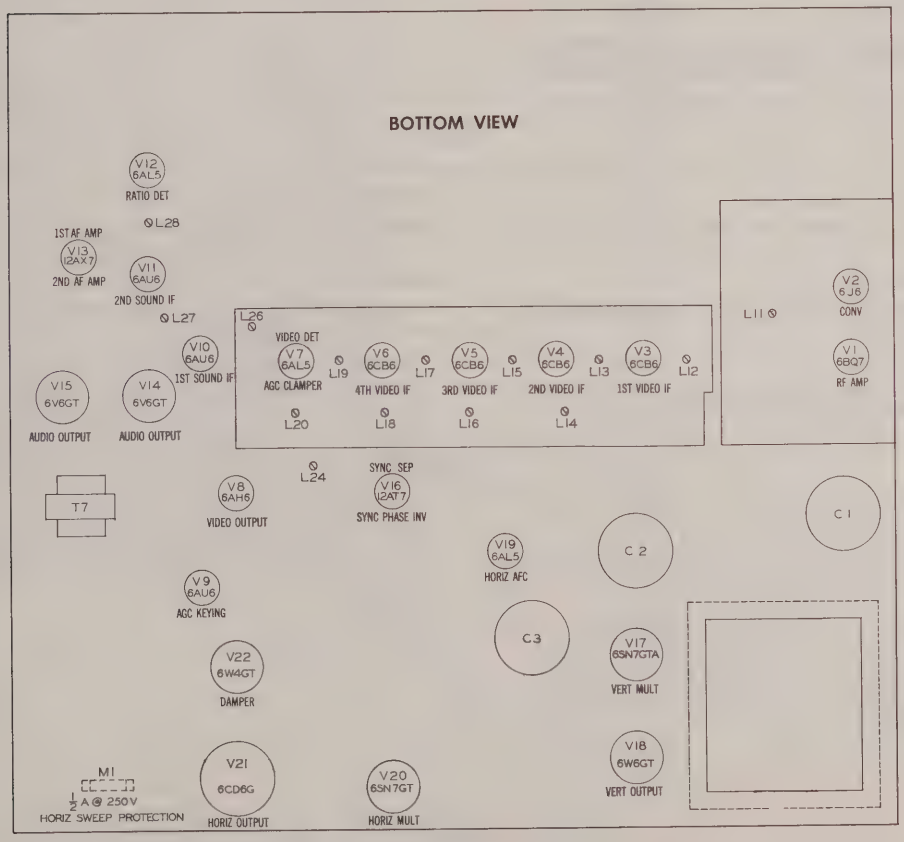
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	1Meg	0Ω	.1Ω	0Ω	1.8KΩ	300KΩ	INF	0Ω
V 2	6J6	†6.7KΩ	†17KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	60KΩ	47Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 4	6CB6	0Ω	120Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 5	6CB6	50KΩ	47Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 6	6CB6	0Ω	180Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 7	6AL5	.1Ω	600KΩ	.1Ω	0Ω	0Ω	0Ω	4.7KΩ		
V 8	6AH6	4.7KΩ	0Ω	0Ω	.1Ω	†6.9KΩ	†1.4KΩ	500Ω		
V 9	6AU6	†52KΩ	†1.4KΩ	†1.6KΩ	†1.6KΩ	450KΩ	†150Ω	†1.4KΩ		
V 10	6AU6	100KΩ	0Ω	.1Ω	0Ω	†3.1KΩ	†3.1KΩ	390Ω		
V 11	6AU6	47KΩ	0Ω	.1Ω	0Ω	9KΩ	†3.1KΩ	82Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	20KΩ		
V 13	12AX7	†500KΩ	25KΩ	6.8KΩ	0Ω	0Ω	†500KΩ	100KΩ	8.2KΩ	.1Ω
V 14	6V6GT	†700Ω	.1Ω	†1KΩ	†800Ω	470KΩ	INF	0Ω	270Ω	
V 15	6V6GT	†700Ω	.1Ω	†868Ω	†690Ω	470KΩ	†120KΩ	0Ω	270Ω	
V 16	12AT7	†4.7KΩ	†700KΩ	4KΩ	0Ω	0Ω	†700KΩ	5.2Meg	0Ω	.1Ω
V 17	6SN7GTA	4.7Meg	♦ 190KΩ	1KΩ	1.7Meg	♦ 690KΩ	1KΩ	.1Ω	0Ω	
V 18	6W6GT	INF	0Ω	†1.7KΩ	†1.8KΩ	1.7Meg	INF	.1Ω	1KΩ	
V 19	6AL5	47KΩ	47KΩ	0Ω	.1Ω	5.3Meg	0Ω	5.3Meg		
V 20	6SN7GT	4.7Meg	13KΩ	1.5KΩ	40KΩ	†200KΩ	1.5KΩ	.1Ω	0Ω	
V 21	6CD6G	INF	0Ω	120Ω	INF	470KΩ	470KΩ	.1Ω	†10.3KΩ	TOP CAP ♦22Ω
V 22	6W4GT	INF	50KΩ	INF	INF	†300Ω	INF	INF	INF	
V 23	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ♦577 Ω
V 24	5U4G	INF	20KΩ	INF	1Ω	INF	10Ω	INF	20KΩ	
V 25	5U4G	INF	20KΩ	INF	1Ω	INF	10Ω	INF	20KΩ	
V 26	24CP4A	†1.6KΩ	†80KΩ	PIN 10 †1.3KΩ	PIN 11 †140KΩ	PIN 12 †1.6KΩ				

† MEASURED FROM PIN 2 OF V24
♦ MEASURED FROM PIN 3 OF V22



TUBE PLACEMENT CHART

SET 257 FOLDER 7

HOFFMAN MODELS 24B151, U, 24B726, U, 24M150, U, 24M725, U, 24P152, U, 24P727, U (Ch. 402-24, 403-24)

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V21, V22, V24 and V25. Check adjustments R10, B2, and B3. Check T2, T4A, T6, R127 and other associated components.

DRIVE LINES

Check adjustments R10 and B3. Check by substitution V21 and V22. Check R127 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V21 and V22. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V20, V21 and V22. Check C104 for open. Check horizontal sweep alignment.

XMAS TREE EFFECT

Check by substitution V20, V21 and V22. Check T2 and T4A for internal arcing. Check adjustments B1 and R10. Check C106, C105, R121, R119 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V17 and V18. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T3, T4B, C4, C96, R108 and other associated components.	Check C94, C92, C99, R101, R98 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V17 and V18. Check vertical size and vertical linearity controls for porper adjustment. Check T3 and T4B.

COMPRESSED AT BOTTOM

Check by substitution V17 and V18. Check R6, R129, C94 and other associated components.

COMPRESSED AT TOP

Check by substitution V17 and V18. Check R7, R104, R105, R106 and other associated components.

FOLDS

Check by substitution V17 and V18. Check R102, R104, C93 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V16. Check C87, C88, R88, R93, R92 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V17. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check C92, C91, R5, R100 and other associated components.	Check vertical integrator network for component failure or change of value. Check IF alignment for overloading.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V19 and V20. Check C100, C99, L29, C105, C103, R113, R114 and other associated components.

HORIZONTAL BENDING

Check by substitution V9, V16, V19 and V20. Check components associated with V16 and V19.

VIDEO

LOSS OF VIDEO

Substitute V8. Check C55, R48, R56, L25, L24 and other associated components.

SOUND BARS (4.5MC Beat)

Adjust tuner fine tuning for best sound and picture. Check adjustment A5. Check Video IF alignment.

POOR CONTRAST

Substitute V8. Check contrast control, L24, L25, L23, C57, R49, picture tube and other associated components. Check AGC network.

NEGATIVE PICTURE

Substitute V8. Check video detector network, picture tube, R49, C57, L21 and other associated components.

SMEAR

Check by substitution V7, V8 and V9. Check L21, L22, L23, L24, C57 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5, V6, V7 and V8 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12, V13, V14 and V15. Check stages V13, V14 and V15 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check ratio detector network and audio IF stages for component failure or change of value. Check phono and TV switch for TV position.	Check C78, C83, C85, C86, C84, R85, R84, R72, R77, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A4 for minimum buzz. If still unsatisfactory, check audio IF alignment.

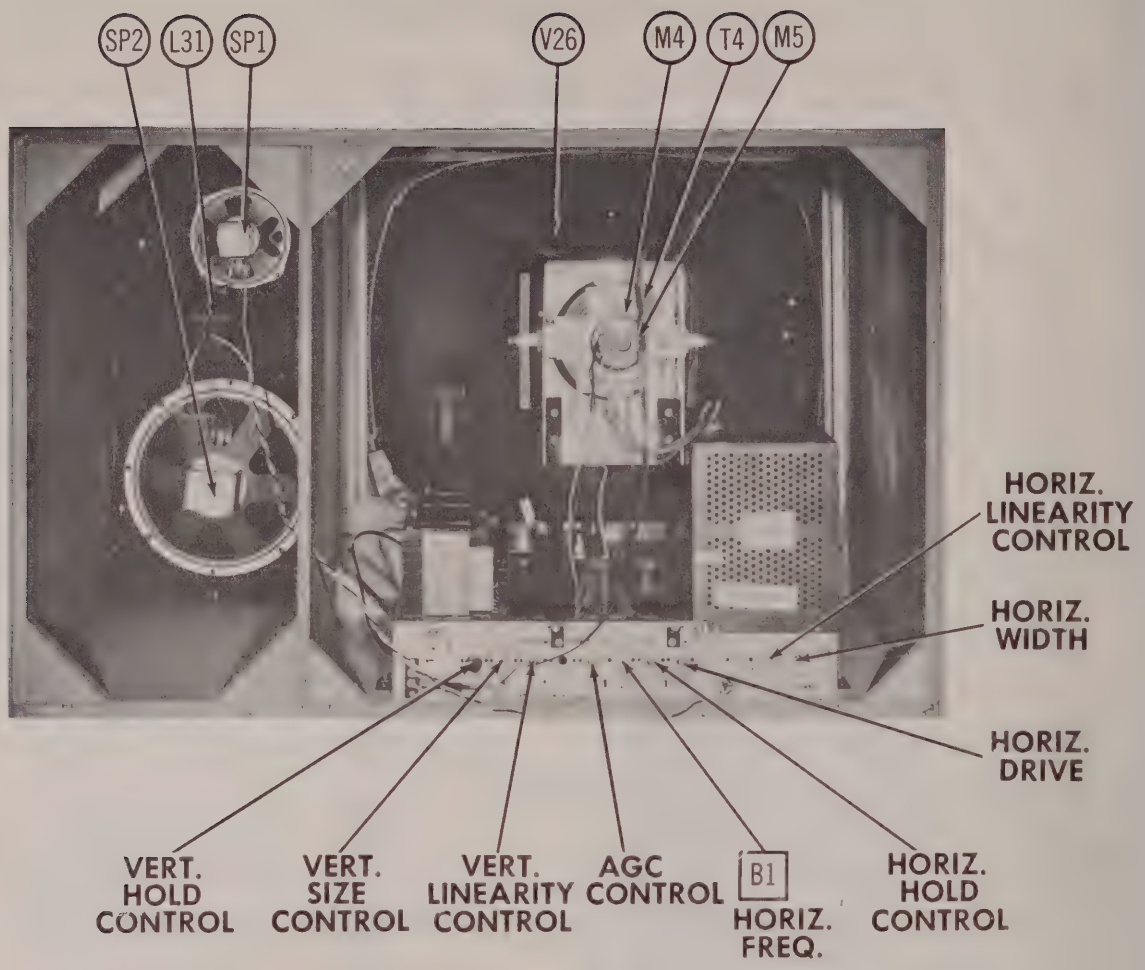
DISTORTED

Follow procedure outlined under "Weak Or No Sound".

PROPERTY OF
L. F. BLANKENSHIP

HOFFMAN MODELS 24B151, U, 24B726, U, 24M150, U,
24M725, U, 24P152, U, 24P727, U (Ch. 402-24, 403-24)

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal drive control clockwise as far as possible without the presence of a vertical white line or compression near the center of the picture.

Set the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) counter clockwise while switching on and off channel until the picture loses sync. Turn B1 clockwise and note the least number of diagonal bars just before the picture pulls into sync. There should not be less than 2 bars if the horizontal circuits are operating properly. Continue turning B1 clockwise, while switching on and off channel, until sync is lost again, then turn B1 counter clockwise and note the point where the picture pulls into sync. Turn B1 an additional $\frac{1}{2}$ turn counter clockwise.

Turn the horizontal drive control counter clockwise until a vertical white line appears near the center of the raster. Turn the Horiz. Drive control clockwise until the white line just disappears.

Adjust the width control slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug for a picture that is symmetrical from left to right.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER, CO

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector-AGC Clamper	6AL5	6AL5	6BT	
V8	Video Output	6AH6	6AH6	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	1st AF Amplifier-2nd. AF Amp.	12AX7	12AX7	9A	On chassis 402 a 6AV6 is used.
V14	Audio Output	6V6GT	6V6GT	7S	On chassis 402 a single 6K6 is used.
V15	Audio Output	6V6GT	6V6GT	7S	
V16	Sync Sep-Sync Phase Inverter	12AT7	12AT7	9A	
V17	Vert. Mult	6SN7GTA	6SN7GTA	8BD	
V18	Vert. Output	6W6GT	6W6GT	7S	
V19	Horiz. AFC	6AL5	6AL5	6BT	
V20	Horiz. Mult	6SN7GT	6SN7GT	8BD	
V21	Horiz. Output	6CD6G	6CD6G	5BT	
V22	Damper	6W5GT	6W5GT	4CG	
V23	HV Rectifier	1B3GT	1B3GT	3C	
V24	LV Rectifier	5U4G	5U4G	5T	
V25	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: HOFFMAN PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V26	24CP4A 24CP4	24CP4A	24CP4A	24CP4A 24CP4		12N 12N	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	350	4251	AFH4-55				FP420.26	TVL-4634	
B	▲100	350		PRS450/80						
C	▲30	350								
D	50	50								
C2A	▲40	350	4252	AFH4-51		D061		FP430.2	TVL-4732	
B	▲10	350								Note 1
C	■20	350								Note 2
D	25	25								
C3A	▲60	350	4259	AFH3-29		C023		FP375.6	TVL-3640	Note 1
B	■40	350								Note 1
C	▲20	350								
C4	10	600	4253	PRS600/10		BRHV610		TC92		
C5	5	50	4209	PRS150/4		BR550		TC30	TVA-1303	
C6	3-8				829-10					
C7	3-8				829-10					
C8	1000			EF-001	MFT-1000				503C-D1	
C9	3			SI3NP0	TCZ-3.3	Z007	NP0K-3R3	ZT-5533	5TCCB-V33	
C10	1000			EF-001	MFT-1000				503C-D1	
C11	.5-3				829-3		3115-01-0R5	CT565A		
C12	120			BPD-00012	D6-121	G044	801-121	UC-5312	5GA-T12	
C13	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C14	1000			EF-001	MFT-1000				503C-D1	
C15	51			SI51	D6-510	G035	831-510			
C16	.5-3				829-3		3115-01-0R5	CT565A		
C17	10			SI10NP0	TCZ-10	Z018	NP0K-100	ZT-541	5TCC-Q1	
C18	5									
C19	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C20	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C21	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0K-6R8	ZT-5568	5TCCB-V68	
C22	82				TCN-82	N040	N750L-820			
C23	1000			EF-001	MFT-1000				503C-D1	
C24	1000			EF-001	MFT-1000				503C-D1	
C25	5000		4029	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C26	5000		4029	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C27	.22	200	4131	P288-22		CUB2P22		PT4022	2TM-P22	
C28	1000		14031	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C29	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C30	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C31	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C32	1.5		4082	SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515	5TCCB-V15	
C33	20	500		1469-200		22R5Q2			MS-42	
C34	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C35	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C36	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C37	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C38	1.0	100	14200	484-1.0		CUB2W1		PT41	2TM-M1	
C39	5		14051	SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C40	100	500		1469-101		22R5T1		MCB235	MS-31	
C41	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C42	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C43	5000		4029	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C44	1.5		4082	SI1.5NP0	TCZ-1.5	TZ04	NP0K-1R5	ZT-5515	5TCCB-V15	
C45	100	500		1469-101		22R5T1		MCB235	MS-31	
C46	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C47	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C48	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C49	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C50	1.5		4082	SI1.5NP0	TCZ-1.5	TZ04	NP0K-1R5	ZT-5515	5TCCB-V15	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLO.

PARTS LIST & DESCRIPTION (continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
			REPLACEMENT DATA							
C51	20	500		1469-200		22R5Q2				
C52	1500		14030	BPD-0015	DD-152	K07I	87Q-0015	DC-5215	5HK-D15	
C53	1500		14030	BPD-0015	DD-152	K07I	80I-0015	DC-5215	5HK-D15	
C54	5		14051	S1SNP0	TCZ-4.7	TZ0T	NP0K-050	ZT-555	5TCC-D-V47	
C55	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C56	47			S14TNP0	TCZ-47	Z083	NP0K-470	ZT-5447	5TCC-Q47	
C57	22	200	4131	P288-22		CUB2P22		PT4022	2TM-P22	
C58	22	200	4131	P288-22		CUB2P22		PT4022	2TM-P22	
C59	500	1500	4078							
C60	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C61	15		14052	SI15	D6-150	TP1I	GP1K-150	UC-5415	5GA-Q15	
C62	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C63	1500		14030	BPD-0015	DD-152	K079	80I-0015	DC-5215	5HK-D15	
C64	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C65	47			S14TNP0	TCZ-47	TZ23	NP0K-470	ZT-5447	5TCC-Q47	
C66	47		14057	S14TNP0	TCZ-47	TZ23	NP0K-470	ZT-5447	5TCC-Q47	
C67	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C68	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C69A	4000		4036	BPD-2X4004	D6-402	DX07B	822-004	DCD-534	5HK-ED4	
B	4000				D6-402					
C70	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C71	330		4065	SI330	D6-331	TP4S	GP2K-331	UC-5333	5GA-T33	
C72	.0047	400	4137	P888-0047	D6-472	CUB6D47	GP2-333-472	PT8247	6TM-D47	
C73	5000		4029	BPD-005	DD-502	K080	81I-005	DC-525	5HK-D5	
C74	100		4079	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C75	.1	200	4163	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C76	.001	400	4175	P888-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C77	.0082	400	4189			PM6D82				
C78	.1	200	4163	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C79	.0082	400	4189			PM6D82				
C80	.01	400	4134	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C81	.01	400	4134	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C82	.1	200	4163	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C83	.047	200	4147	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C84	.047	400	4148	P488-047	DF-502	CUB4S47		PT4147	4TM-S47	
C85	180	500	4070	1468-181	D6-181	5W5T18	GP2K-181	MC235	1FM-32	
C86	180	500	4070	1468-181	D6-181	5W5T18	GP2K-181	MC235	1FM-32	
C87	.0022	400	4126	P888-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C88	220		4026	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C89	.0047	400	4127	P888-0047	D6-472	CUB6D47	GP2-333-472	PT8247	6TM-D47	
C90A	.002							PT632		
B	.005		•6965	•PA-110	•PC-100	•115TM1	•1405-01	PT635	•V-1	
C	.005							PT635		
C91	.047	200	4158	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C92	.0039	500	14113	1464-392		1F5D39		MCB463	MB-24	
C93	.1	600	14133	P668-1	DF-104	CUB6P1		PT601	6TM-P1	
C94	.1	600	4144	P668-1	DF-104	CUB6P1		PT601	6TM-P1	
C95	1000		4079	SI000	D6-102	TP35	GP2L-102	UC-521	5HK-D1	Note 3
C96	.022	600	4124	P668-022	DF-203	CUB6S22	817-02	PT6122	6TM-S22	
C97	.022	600	4124	P668-022	DF-203	CUB6S22	817-02	PT6122	6TM-S22	
C98	.22	600	4129	664-22		CUB6P25		PT6025	6TM-P25	
C99	.001	400	4175	P668-001	D6-103	CUB6D1	GP2L-102	PT621	6TM-D1	
C100	.001	400	4175	P668-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C101	.0022	400	4126	P668-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C102	.001	400	4175	P668-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	Note 3
C103	.0047	600	4127	P668-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C104	.047	200	4147	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C105	3900	500	4085	1464-392		1B5D39		MCB463	MB-24	
C106	470	500	14069	1469-471		5R5T47		MCB245	MB-35	
C107	.001	600	14104	P668-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C108	390	500	14010	1469-391		5R5T39		MCB243	MB-34	
C109	.0047	600	4128	P668-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C110	.1	600	4144	P668-1	DF-104	CUB6P1		PT601	6TM-P1	
C111	.47	200	4173	P288-47		CUB2P47		PT4047	2TM-P47	
C112	.033	600	14127	P668-033		PM6S33		PT6133		
C113	.022	600	4124	P668-022		CUB6S22		PT6122	6TM-S22	
C114	500	30000	14037		TV8-503	MMU30T5			3DK-T5	
C115	135	3000								
C116	.01	600	4105	689ZX-01		CUB6S1		PT611	6TM-S1	
C117	.01	600	4105	689ZX-01		CUB6S1		PT611	6TM-S1	
C118	.1	600	4144	P668-1	DF-104	CUB6P1		PT601	6TM-P1	

Note 1. Not used in 402 chassis.
Note 2. Not used in 403 chassis.
Note 3. Not used in all versions.
• Items C90A, C90B, C90C, R94A, R94B, R94C are combined in one unit.

CONTROLS

ITEM No	RATING RESIST. ANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
			REPLACEMENT DATA					
R1A	1500Ω	½	H-4903	* QJ-535		F1-7		Contrast (Panel) Note 1
B	1 Meg	½				R2-63		Volume tapped @ 300KΩ (Rear)
C	Switch					KB-3		Attach to R1B
R2A	500KΩ	½	H-4905	Q13-133	A47-500K-Z	B8K-60	U-46	Bass
B	Shaft		Not Req.	Not Req.	K8S-3	Not Req.	Not Req.	Attach to R2A
R3	50KΩ	½	H-4906					Brightness & phono switch
R4A	500KΩ	½	H-4905	Q13-133	A47-500K-Z	B8K-60	U-46	Treble
B	Shaft		Not Req.	Not Req.	K8S-3	Not Req.	Not Req.	Attach to R4A
R5A	1 Meg	½	H-4832-2	Q11-137	A47-1Meg-S	AB-59	U-54	Vert. Hold- Note 2
B	Shaft		Not Req.	Not Req.	K8S-3	AK-4	Not Req.	Attach to R5A
R6A	2 Meg	½	H-4864	Q11-139	A47-2Meg-S	AB-75	SU-56	Vert. Size
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R6A
R7A	5000Ω	½	H-4865	Q11-114	A47-5000-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R7A
R8A	50KΩ	½	H-4853	Q11-123	A47-50K-S	AB-31	SU-35	AGC
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R8A
R9A	25KΩ	½	H-4859	Q11-120	A47-25K-S	AB-26	SU-29	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R9A
R10A	25KΩ	½	H-4859	Q11-120	A47-25K-S	AB-26	SU-29	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R10A

Note 1. Some versions may use an alternate control Part No. H-4907.
Note 2. Some versions may use an alternate control Part No. H-4868.
* CONCENTRIKIT EQUIVALENT KT K-2 BASE ELEMENTS & SHAFTS B17-109 & P1-204 (Panel)
B13-137X & R1-223 (Rear) & SWITCH 78-3.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	IRC PART No.	NOTES
			REPLACEMENT DATA		
R11	15KΩ	½		BTS-15K	
R12	47KΩ	½		BTS 47K	
R13	330KΩ	½		BTS-330K	
R14	100KΩ	½		BTS-100K	
R15	180KΩ	½		BTS-180K	
R16	470Ω	½		BTS-470	
R17	15KΩ	½		BTS-15K	
R18	220KΩ	½		BTS-220K	
R19	15KΩ	½		BTS-15K	
R20	10KΩ	½		BTS-10K	
R21	4700Ω	½		BTS-4700	
R22	1000Ω	½	4659	BTS-1000	
R23	470Ω	½		BTS-470	Note 1
R24	47KΩ 5%	½	4537	BTS-47K 5%	
R25	10KΩ	½	4597	BTS-10K	
R26	470Ω	½	4664	BTS-470	
R27	47Ω	½	4639	BTS-47	
R28	470Ω	½	4664	BTS-470	
R29	15KΩ	½	4531	BTS-15K	
R30	47KΩ 5%	½	4537	BTS-47K 5%	
R31	120Ω	½	4546	BTS-120	
R32	470Ω	½	4664	BTS-470	
R33	3900Ω	½	3654	BTS-3900	
R34	470Ω	½	4664	BTS-470	
R35	3300Ω	½	4607	BTS-3300	
R36	470KΩ 5%	½	34550	BTS-470K 5%	
R37	47Ω	½	4639	BTS 47	
R38	470Ω	½	4664	BTS-470	
R39	8200Ω 5%	½		BTS-8200 5%	
R40	180Ω	½	14618	BTS-180	
R41	470Ω	½	4664	BTS-470	
R42	120KΩ 5%	½	4659	BTS-120K 5%	
R43	1.8Meg	½	34612	BTS-1.8Meg	
R44	22KΩ	½	4626	BTS-22K	
R45	4700Ω 5%	½	4629	BTS-4700 5%	
R46	680Ω	½	4514	BTS-680	
R47	33Ω	½		BTS-33	Note 2
R48	1500Ω 5%	½	4610	BTS-1500 5%	
R49	120KΩ	½	4548	BTS 120K	
R50	39KΩ	½	44566	BTS-39K	
R51	15KΩ	½	4531	BTS-15K	
R52	47KΩ	½	4504	BTS-47K	
R53	1 Meg	½	4614	BTS-1 Meg	
R54	27KΩ	½	24618	BTS-27K	
R55	330KΩ 5%	½	34532	BTS-330K 5%	
R56	3900Ω 5%	½	24550	BTA-3900 5%	
R57	100KΩ	½	4511	BTS-100K	
R58	390Ω	½	4549	BTS-390	
R59	1000Ω	½	4542	BTS-1000	
R60	47KΩ	½	4504	BTS-47K	
R61	82Ω	½	4568	BTS-82	
R62	1000Ω	½	4542	BTS-1000	
R63	10KΩ	1	4644	BTA-10K	
R64	6800Ω	1	4608	BTA-6800	
R65	270Ω	½	4663	BTS-270	
R66	15KΩ	½	4531	BTS-15K	
R67	10KΩ	½	4597	BTS-10K	
R68	10KΩ	½	4597	BTS-10K	
R69	4700Ω	½	4576	BTS-4700	
R70	10KΩ	½	4597	BTS-10K	
R71	8200Ω	½	4651	BTS-8200	
R72	270KΩ	½	4602	BTS-270K	
R73	220KΩ	½	4618	BTS-220K	
R74	56KΩ	½	34652	BTS-56K	
R75	22KΩ	½	4628	BTS-22K	

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	IRC PART No.	NOTES
			REPLACEMENT DATA		
R76	6800Ω	½	4557	BTS-6800	
R77	270KΩ	½	4602	BTS-270K	
R78	220KΩ	½	4618	BTS-220K	Note 2
R79	470KΩ	½	4622	BTS-470K	
R80	270Ω	2	14639		
R81	180Ω	1		BTA-330	Note 3
R82	180KΩ	½	4634	BTS-180K	Note 2
R83	470KΩ	½	4622	BTS-470K	
R84	10KΩ	2		BTS-10K	Note 2
R85	270Ω	2	14639	BTS-270	
R86	470KΩ 5%	½	4622	BTS-470K 5%	
R87	4.7Meg	½	4544	BTS-4.7Meg	
R88	680KΩ	½	34568	BTS-680K	
R89	1800Ω 5%	½	24517	BTS-1800 5%	
R90	1800Ω 5%	½	24517	BTS-1800 5%	
R91	390Ω	½	4549	BTS-390	
R92	2200Ω 5%	½	24525	BTS-2200Ω 5%	
R93	2200Ω 5%	½	24525	BTS-2200Ω 5%	
R94A	22KΩ	½		BTS-22K	
B	8200Ω	½	• 9695	BTS-8200	
C	8200Ω	½		BTS-8200	
R95	330KΩ	½	4677	BTS-330K	
R96	4.7Meg	½	34659	BTS-4.7Meg	
R97	4.7Meg	½	34659	BTS-4.7Meg	
R98	1000Ω	½	4559	BTS 1000	
R99	180KΩ	1	34507	BTA-180K	
R100	1.2Meg	1	34593	BTS-1.2Meg	
R101	680KΩ	1	34571	BTA-680K	
R102	5600Ω	½	4629	BTS-5600	
R103	330KΩ	½	4677	BTS-330K	Note 2
R104	1000Ω	½		BTS-1000	Note 3
R105	470Ω	½		BTS-470	Note 2
R106	470Ω	½		BTS-470	Note 2
R107	100Ω	½	4547	BTS-100	
R108	120Ω	½		BTS-120	Note 4
R109	4700Ω	½	4543	BTS-4700	
R110	560Ω	½		BTS-560	
R111	560Ω	½		BTS-560	
R112	1000Ω	½		BTS 1000	
R113	100KΩ	½	4571	BTS-100K	
R114	100KΩ	½	4571	BTS-100K	
R115	470KΩ	½	4508	BTS-470K	
R116	4700Ω	½		BTS-4700	Note 5
R117	4.7Meg	½	4544	BTS-4.7Meg	
R118	15000Ω 5%	½	4610	BTS-1500 5%	
R119	5600Ω	½		BTS-5600	Note 6
R120	82KΩ	½	24670	BTS-82K	
R121	180KΩ	½	4634	BTS-180K	
R122	47KΩ	½		BTA 47K	
R123	470KΩ	½	4622	BTS-470K	
R124	100Ω	½	4547	BTS-100	
R125	8200Ω	½	4651	BTS-8200	
R126	120Ω	2	4657		
R127	10KΩ	½	4503	BTS-10K	
R128	10Ω	1	4085		
R129	10KΩ	1	4625	BTA-10K	
R130	3.9Ω	½			Note 7
R131	3.9Ω	½			Note 7
R132	270Ω	2			Note 8& 2
R133	150Ω	2	14613		Note 2
R134A	800Ω	10	4773		
B	1000Ω	10			
R135	150Ω	10	4771		
R136	150Ω	10	4771		Note 2
R137	150Ω	10	4771		

Note 1. Some versions may use a 4700 resistor in this application.
Note 2. Not used in all versions
Note 3. Some versions may use a 470Ω resistor in this application.
Note 4. Some versions may use a 1000Ω resistor in this application.
Note 5. Some versions may use a 10KΩ resistor in this application.
Note 6. Some versions may use a 8200Ω resistor in this application.
Note 7. Some versions may use a single 1.8Ω resistor in this application.
Note 8. Some versions may use a 150Ω resistor in this application.
• Items R94A, R94B, R94C, C90A, C90B, C90C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	HOFFMAN PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
				REPLACEMENT DATA						
T1	117VAC @ 2.6A	630VCT .330ADC	5VAC @ 6A	5042						
		SEC. 3	SEC. 4	SEC. 5						
		6.3VAC @ 1.1A	6.3VAC @ 1.2A	6.3VAC @ 10.1A	5043 ①					

① Alternate power trans.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	HOFFMAN PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
		REPLACEMENT DATA						
T2	Horiz. Output Trans.	5087			D-50 & W-11 •	235T1 & 214R1 •		F1Y-16 & W-20 •
T3	Vert. Output Trans.	5188	A-8142 ⑨		A-08X			25B06
T4A	Yoke (90°) -Horiz. (11MH)	5189	DY-13A ⑨	MDF-90 ②	Y-50-1	219D1 ②		Y-14
B	Vert. (38MH)							
T5	Horiz. Lin. Coil (1.2-1.9MH)	5561	WC-8 ⑨	MWC-6 ⑨	Wt.-12 ⑨	213R1	DF800 ⑨	WC-18 ⑨
T6	Width Coil (2.8-18MH)	5464 ⑫	WC-5 ⑨ 7/8	MWC-1 ⑨ 7/8	Wt.-1 ⑨ 7/8	215R1 ⑧	DF800 ⑨ 5/8	WC-20 ⑨ 5/8

① Drill new mounting holes.
② Use original yoke network.
③ Enlarge mounting hole.
④ Connect to coded blue and green terminals.
⑤ Connect to terminals #3 and #4.
⑥ Two units used, connected in series
⑦ Connect to coded red and blue terminals.
⑧ This unit replaces the two original units connected in series.
⑨ Connect to terminals #1 and #2.
⑩ Use original horizontal yoke network if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
9			9	9		9
5			5	5		5
3			See Note ⑪	See Note ⑪		See Note ⑬
1			1	1		1
2			WC-11 Orange term	214R1 Term. C		WC-20 Term #1
6			Wt. 11 Black term.	214R1 Term. D		WC-20 Term. #2
Connect Width Coil Across → 3 & 1			WC-11 Red & blue terminals 2 & 1	214R1 Term. "A" & "B" 3 & 1		WC-20 Term. #3 & #4 3 & 1
Special Notes			⑪ ⑫	⑪ ⑫		⑬ ⑭

⑪ Connect yoke return to terminal "T". Connect damper tube fil. and C59(AGC keyer pulse coupling) to terminal #4.
⑫ If the picture is out of phase, reverse connections to width coil pri. or sec.
⑬ Connect yoke return to terminal #3. Connect damper tube fil. and C59 (AGC keyer pulse coupling) to terminal T.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	HOFFMAN PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
			REPLACEMENT DATA						
T7	2.7KΩ	3.4Ω	5170						
	PRI. 2 Tap ⑭		5192 ①						
	2.7KΩ	1.7Ω							

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	HOFFMAN PART No.	VIKING PART No.	QUAM PART No.	NOTES
				REPLACEMENT DATA			
SP1	10"	PM	3.4Ω	9099	10J1J	10A31	① Used in chassis 402-24
SP2	5 1/4"	PM	3.4Ω	9091	52S74	52A1	
	12"	PM	3.4Ω	9074 ①	12J1J	12A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
				REPLACEMENT DATA				
L1	1F Trap	0Ω						Coil wound on 68MMF capacitor
L2	1F Trap	0Ω						Coil wound on 68MMF capacitor
L3	Ant. Coils	0ΩCT	0Ω					
L4	1F Trap	1Ω						
L5	Fil. Choke	0Ω						
L6	Neut. Coil	0Ω						
L7	RF, Mixer Grid & Osc. Coils	0Ω						
L8	Fil. Choke	0Ω						
L9	RF Choke	0Ω						
L10	RF Choke	1.5Ω						
L11	Conv. Plate	.1Ω						
L12	1st Video IF	.1Ω		5539	17-4531 ▲		6231 ■	
L13	2nd Video IF	0Ω	0Ω	5538	17-4531 ▲		6233 †	
L14	47.25MC Trap	.1Ω		5440				
L15	3rd Video IF	.1Ω	.1Ω	5537	17-4531 ▲		6233 †	
L16	41.25MC Trap	0Ω		5438				
L17	4th Video IF	0Ω	0Ω	5538	17-4531 ▲		6234	
L18	41.25MC Trap	0Ω		5438				
L19	5th Video IF	.1Ω	.1Ω	5537	17-4531 ▲		6233 †	
L20	Cathode Trap	.1Ω		5440				
L21	Series Peaking Coil	1Ω		5433	19-3180 •	TV-104 •	4044	150 Microhenries, Wound on 39KΩ resistor

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L22	Shunt Peaking Coil	28Ω		5434			4652	* 970Microhenries; Wound on 39KΩ resistor
L23	Series Peaking Coil	8.5Ω		5433	19-3160 ♦	TV-184 ♦	4644	150 Microhenries; Wound on 39KΩ resistor
L24	4.5MC Trap	1.3Ω		5402	20-1004	TV-151	1470	
L25	Shunt Peaking Coil	15Ω		5340	19-3300 ¶		4648 ¶	350 Microhenries; Wound on 10Meg resistor
L26	1st Sound IF	7.5Ω		5430	17-3402	TV-151 ††	1470	
L27	2nd Sound IF	1.3Ω		5437	17-3400	TV-151	1469	
L28	Ratio Detector	3.8Ω	.6ΩCT	5443	17-1033	TV-110	1468	Tertiary winding=.4Ω
L29	Horiz. Osc.	52Ω		5447	19-1576	TV-163	6210	
L30	RF Choke	0Ω			19-1002		4606	2.5 Microhenries

* Some models use a 150 Microhenries wound on 39KΩ resistor in this application.
■ Use one winding only.
▲ Use one winding only. Detune trap and drill mounting holes.
† Detune trap.
♦ Parallel with 39KΩ resistor.
†† Disconnect cap. in parallel.
¶ Parallel with 10Meg resistor.
● Detune trap and drill mounting holes.

CROSSOVER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA HOFFMAN PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L31		.29Ω							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG Slo-Blo	1/4A 250V	9782		313.250 (1/4A-3AG-Slo-Blo)	357001	MDL 1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M2	Dial Light	9505	Bayonet #44
M3	Tuner	9786	VHF
	Tuner	9795	VHF-UHF
M4	Focus Magnet	9789	Includes centering device
M5	Ion Trap	9702	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HOFFMAN MODELS 24B151, U, 24B726, U, 24M150, U, 24M725, U, 24P152, U, 24P727, U (Ch. 402-24, 403-24)

ALTERNATE TUNER SCHEMATIC

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
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3924 MEADE ST
DENVER, COL

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V24 and V25. Check phono and TV switch for TV position. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V24 and V25. Check B+ filter and decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V20, V21, V22 and V23. Check waveform W16. Check M1 fuse.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, T6, C113, C112, R127, R126 and other associated components.	Check C109, C105, C106, C108, R10, R121, R116, R119, L29 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V21, V22, V23, V24 and V25. Check T2, T4A, T6 and R127. Check B+ filter and decoupling network.

BLOOMING

Check by substitution V21, V22, V23, V24 and V25. Check R128 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6, V7 and V8. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs. The adjustments are accessible, one at time, thru the small hole in the cabinet to the right of the channel selector shaft.

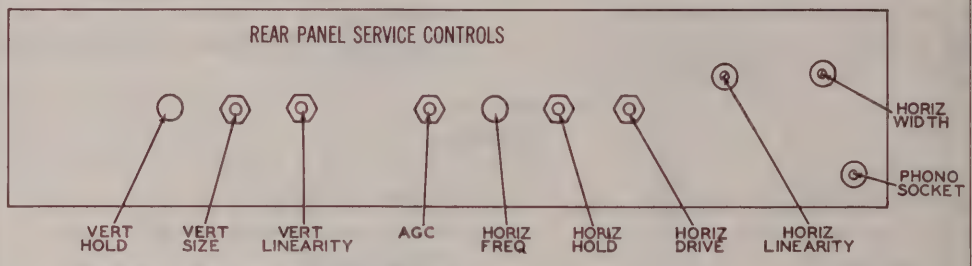
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 3 wood screws holding wood strip at the top of the safety glass. Remove strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

Remove safety glass and mask, rear cover, picture tube socket, ion trap and HV lead. Loosen 2 screws on sides of front tube mount. Remove picture tube.

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L29) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L28) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 large push-on type control knobs. Remove phono-brightness knob, and escheuteon panel, bass-treble knobs as one unit. (Bass and treble knobs mounted on panel) from front of cabinet .
2. Remove 7 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect speaker plug from chassis.
4. Disconnect built-in antenna from terminal strip.
5. Remove 4 chassis bolts and 2 wood screws from chassis mounting bracket.
6. Remove chassis.

PROPERTY OF
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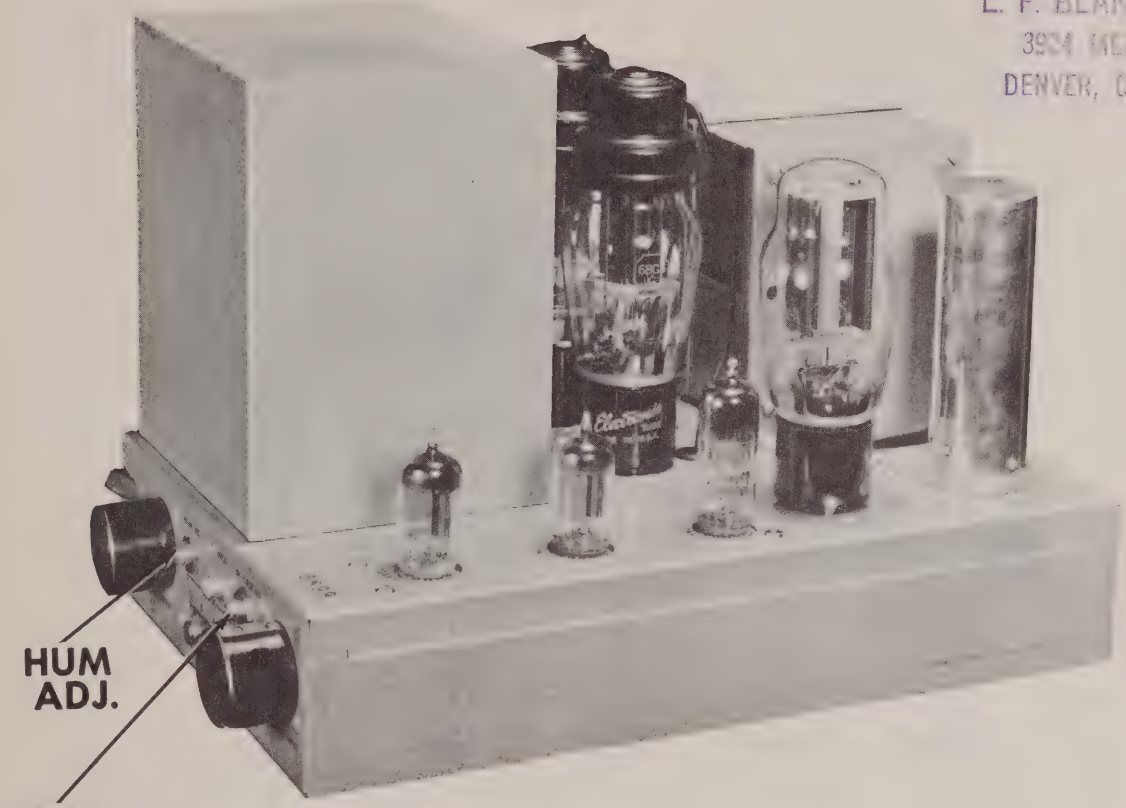
3934 MEADE ST.
DENVER, COLORADO

McINTOSH
MODEL A-116



McINTOSH
MODEL A-116

TRADE NAME	McIntosh Model A-116
MANUFACTURER	Mc Intosh Laboratory, Inc., 320 Water St., Binghamton, N.Y.
TYPE SET	AC Operated 30 Watt Audio Amplifier
TUBES (Six)	Types 12AX7 AF Amp., 12AU7 AF Amp-Phase Inv., 12BH7 Driver, (2) 6BG6G Audio Output, 5U4G Rectifier
POWER SUPPLY	112/120 Volts AC-60 Cycles RATING 1.04 Amp. @ 117 Volts AC

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MC INTOSH PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier-Phase Inverter	12AU7	12AU7	9A	
V3	Driver	12BH7	12BH7	9A	
V4	Audio Output	6BG6G	6BG6G	5BT	
V5	Audio Output	6BG6G	6BG6G	5BT	
V6	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MC INTOSH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■80	450		AFH3-46		C037		FP378	TVL-3787	
B	▲40	450							TVA-1709	
C	▲20	450								
C2	20	150		PRS150/20		BR2015		TC45	TVA-1410	
C3	10	450		PRS450/10		BR1045		TC72	TVA-1705	
C4	.033	600		P688-033		CUB6S33		PT6133	6TM-S33	
C5	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C6	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C7	47			S147	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C8	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C9	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	Note 1
C10	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	Note 1
C11	.25	600		P688-25		CUB6P25		PT6025	6TM-P25	
C12	.25	600		P688-25		CUB6P25		PT6025	6TM-P25	

Note 1. Some models may use an .033MFD @ 400V in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MC INTOSH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	6152742	Q11-133	A47-500K-S	AB-59	U-50	Input adj.
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R1A
R2A	100Ω	2			A43-100			Hum adj. - wire wound
B	Shaft				FKS-1/4			Attach to R2A

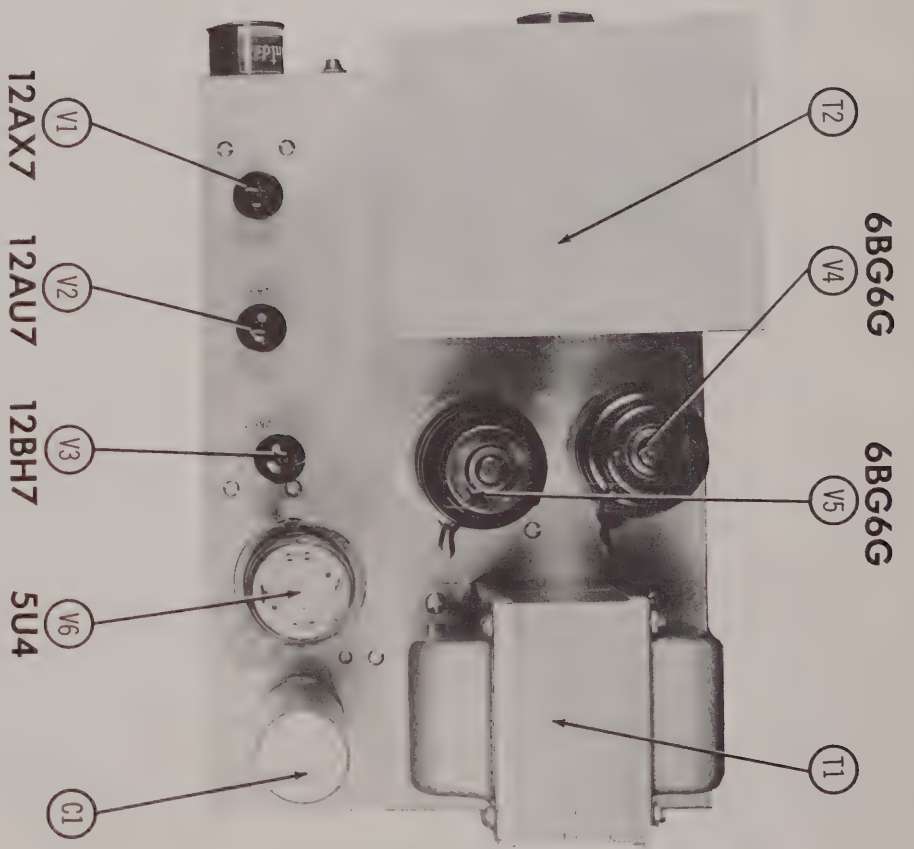
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MC INTOSH PART No.	IRC PART No.	
R3	2.2Meg	½		BTS-2.2Meg	
R4	2200Ω	½		BTS-2200	
R5	56KΩ	1		BTA-56K	Note 4
R6	18KΩ	1		BTA-18K	
R7	120KΩ	½		BTS-120K	
R8	1 Meg	½		BTS-1 Meg	
R9	47KΩ	½		BTS-47K	
R10	100KΩ	½		BTS-100K	
R11	2200Ω	½		BTS-2200	
R12	560KΩ	½		BTS-560K	Note 1
R13	1000Ω 5%	½		BTS-1000 5%	
R14	4700Ω	½		BTS-4700	
R15	100KΩ	½		BTS-100K	
R16	22KΩ	½		BTS-22K	
R17	1.2Meg	½		BTS-1.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MC INTOSH PART No.	IRC PART No.	
R18	1 Meg	½		BTS-1 Meg	
R19	12KΩ	1		BTA-12K	
R20	12KΩ	1		BTA-12K	
R21	100KΩ	½		BTS-100K	Note 5
R22	1200Ω	½		BTS-1200	
R23	12KΩ	1		BTA-12K	
R24	100KΩ	½		BTS-100K	Note 5
R25	12KΩ	1		BTA-12K	
R26	560KΩ	½		BTS-560K	Note 1
R27	560KΩ	½		BTS-560K	Note 1
R28	150Ω	10		1 3/4A-150	
R29	2000Ω	1		BTA-2000	Note 2
R30	2000Ω	1		BTA-2000	Note 2
R31	100KΩ	½		BTS-100K	
R32	56KΩ	½		BTS-56K	
R33	470Ω	½		BTS-470	Note 3

Note 1. Some models may use a 1 Meg resistor in this application.
Note 2. Some models may use a single 44KΩ 2 watt resistor in this application.
Note 3. Some models may use a 680Ω resistor in this application.
Note 4. Some models may use a 47KΩ resistor in this application.
Note 5. Some models may use a 560KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MC INTOSH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ 1.04A	734VCT .130ADC	36VAC .0009ADC	5VAC @ 3A SEC. 4 6.3VAC 3.4A						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.1	SEC.2	MC INTOSH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	1KΩ CT PRI. 2 37.4Ω tap @ 31Ω RES.	16Ω tap @ 8Ω, 4Ω, SEC. 2 1.46Ω RES.							

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MC INTOSH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	RF Choke	0Ω			19-1000*	TV-189 *	4602 *	1 Microhenry, wound on 2KΩ resistor
L2	RF Choke	0Ω			19-1002 †		4606 †	3 Microhenries, wound on 3KΩ resistor

† Parallel with 3KΩ resistor.
* Parallel with 2KΩ resistor.

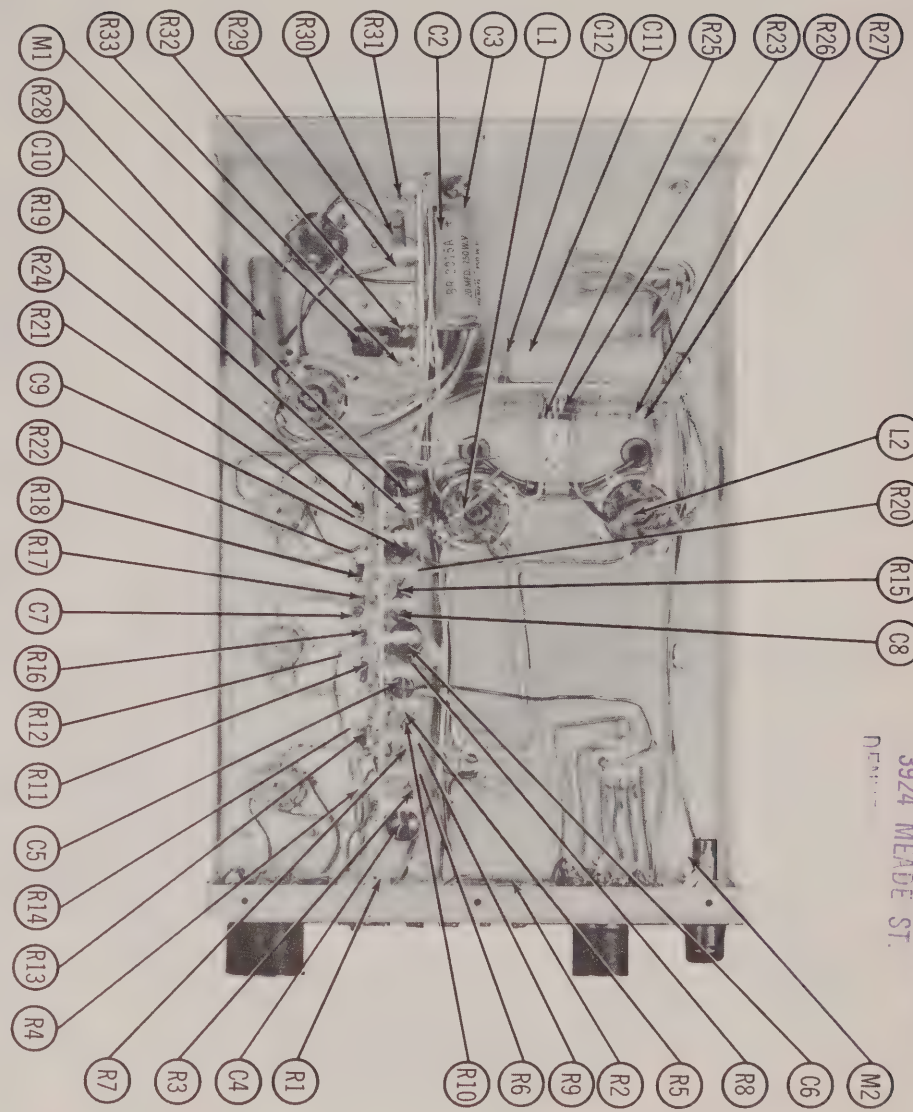
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MC INTOSH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.0009A							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MC INTOSH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3A 250V			312003	342001	AGC 1	HKP

CHASSIS—BOTTOM VIEW



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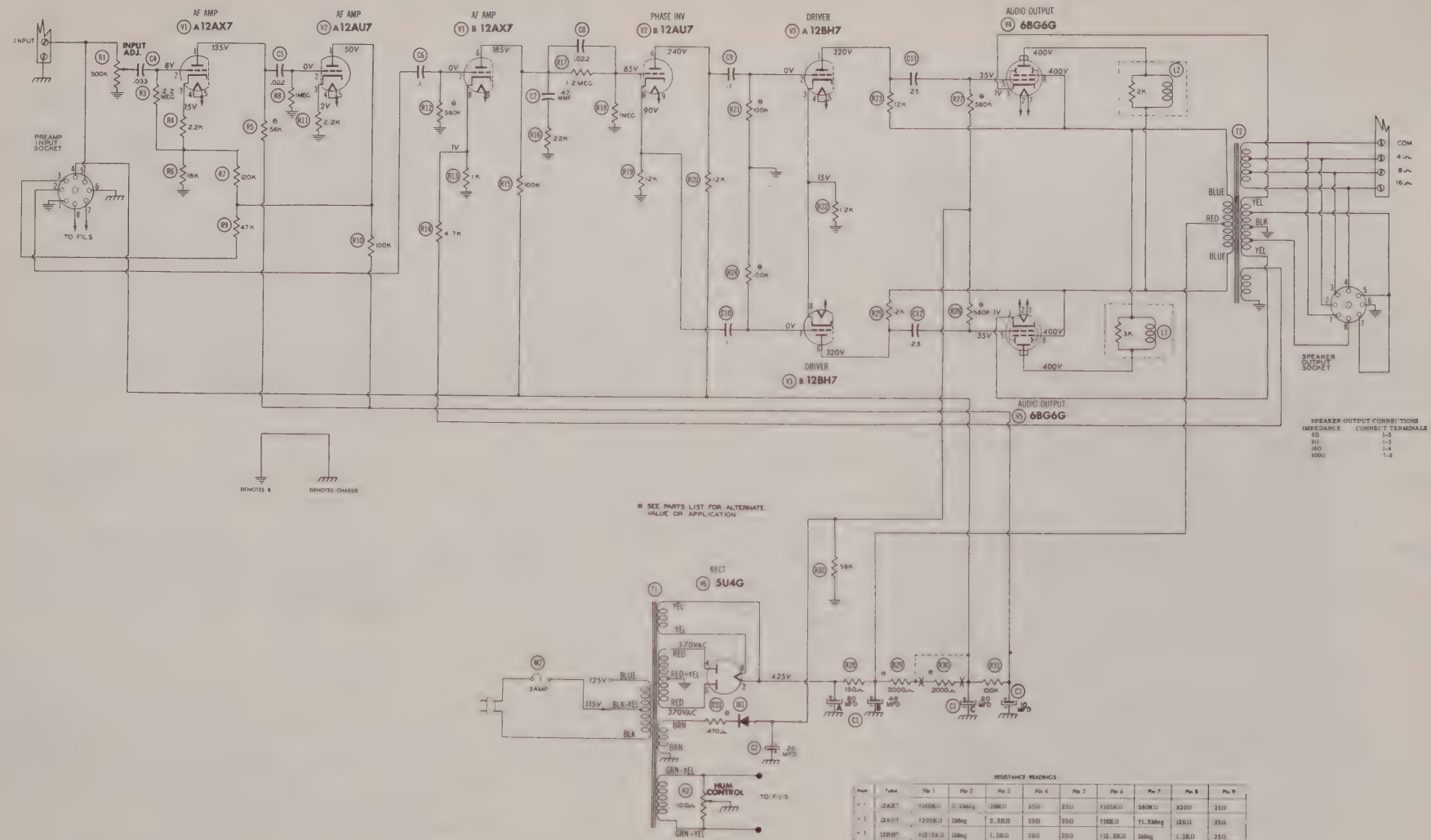
MC INTOSH
MODEL A-116



SPEAKER OUTPUT CONNECTIONS

IMPEDANCE	CONNECT TERMINALS
4Ω	1-3
8Ω	1-2
16Ω	1-4
600Ω	T-B

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†100KΩ	2.2MEG	20KΩ	25Ω	25Ω	†105KΩ	560KΩ	820Ω	25Ω
V 2	12AU7	†205KΩ	1Meg	3.3KΩ	25Ω	25Ω	†185KΩ	†1.3Meg	12KΩ	25Ω
V 3	12BH7	†12.2KΩ	1Meg	1.3KΩ	25Ω	25Ω	†12.3KΩ	1Meg	1.2KΩ	25Ω
V 4	6BG6G	INF	25Ω	18Ω	†200Ω	●580KΩ	INF	25Ω	†200Ω	TOP CAP †190Ω
V 5	6BG6G	INF	25Ω	21Ω	†180Ω	●580KΩ	INF	25Ω	†190Ω	TOP CAP †200Ω
V 6	5U4G	0Ω	80KΩ	INF	62Ω	0.5Ω	42Ω	INF	80KΩ	

† MEASURED FROM PIN 1 OF V8
● MEASURED FROM OUTPUT OF M1

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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FUNCTION SELECTOR SWITCH

VOLUME CONTROL ON-OFF SWITCH

TREBLE CONTROL

BASS CONTROL

MEISSNER
MODEL 9-1160

TRADE NAME	Meissner Model 9-1160
MANUFACTURER	Thordarson-Meissner Mfg. Div., Maguire Industries, Inc., Mt.Carmel, Ill.
TYPE SET	AC Operated 2 Channel 10 Watt Audio Amplifier
TUBES (Five)	Types 6SL7GT Pre-Amp., 6SL7GT Phase Inv., (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING .66 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

MEISSNER
MODEL 9-1160

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MEISSNER PART No.	STANDARD REPLACEMENT		
V1	Pre Amplifier	6SL7GT	6SL7GT	8BD	
V2	Phase Inv. & AF Amp.	6SL7GT	6SL7GT	8BD	
V3	Audio Output	6V6GT	6V6GT	7S	
V4	Audio Output	6V6GT	6V6GT	7S	
V5	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MEISSNER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲20	450	28191	AFH4-67		D052		FP444	TVL-4763	
B	■20	450								
C	▲20	450								
D	20	25								
C2A	▲20	250	34102	AFH2-28		B023		FP217	R1398	
B	■20	250						TC55		
C	20	250								Note 1
C3	4700	500	GM30A472K	1464-005		1W5D47		MCB465		
C4	2200	500	GM30A222K	1464-002		1W5D22		MCB457		
C5	.01	400	28119GT	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C6	.002	400	28150GT	P488-002	D6-202	CUB4D2	GP2-333-202	PT422	4TM-D2	
C7	.03	600	28131GT	P688-03		CUB6S3		PT613	6TM-S3	
C8	.01	400	28119GT	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C9	.047	600	28115	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C10	.047	600	28115	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C11	470	500	GM20A471M	1464-0005		5W5T47		MCB245		
C12	.047	600	34160	689ZX-047	DF-503	PJ6S47		PT6147	6TM-S47	
C13	5000		♦34151-7	♦PA-249	DD-502	K080	811-005	DC-525	5HK-D5	

Note 1. C2C not used in all models.
♦ Item C13 includes resistor R8.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MEISSNER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	29550	Q11-133	A47-500K-S	ABT-66	UT427	Volume tapped @ 100K
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A
R2A	500KΩ	½	29551	Q11-133	A47-500K-S	AB-58	U-50	Treble
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	500KΩ	½	29551	Q11-133	A47-500K-S	AB-58	U-50	Bass
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4	100Ω	4	29260		RTV-80	SVP-983	M100P	Hum balance - wire wound

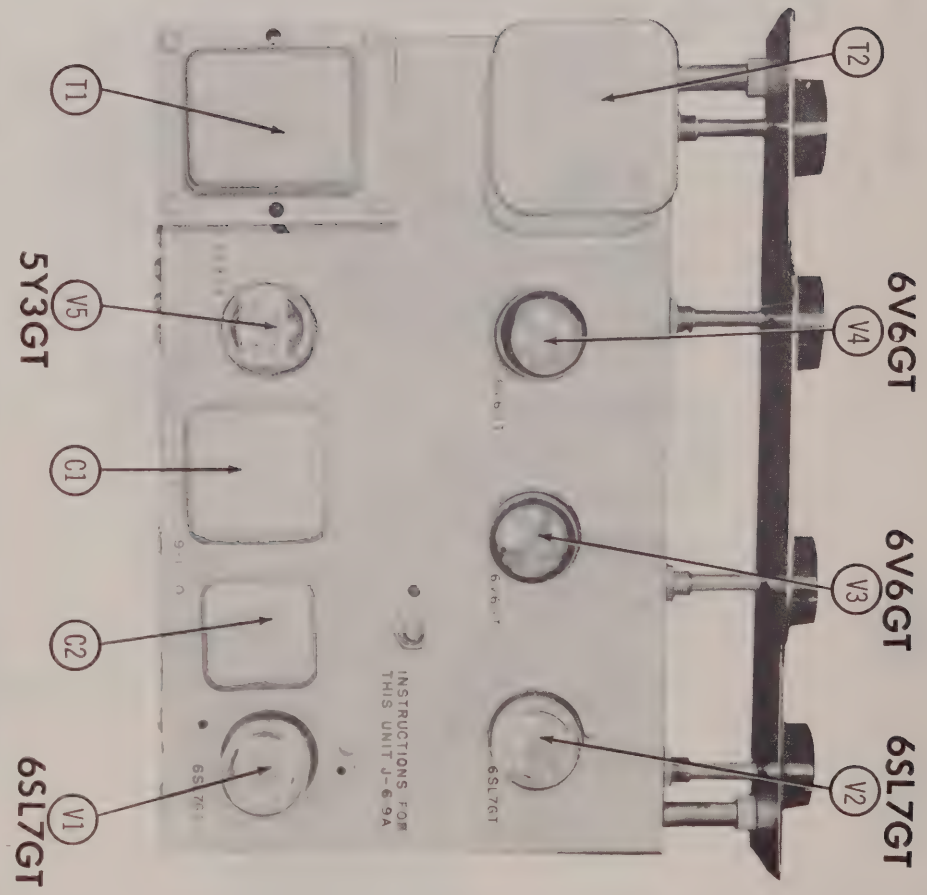
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MEISSNER PART No.	IRC PART No.	
R5	12KΩ	1		BTA-12K	
R6	2200Ω	½		BTS-2200	
R7	220KΩ	½		BTS-220K	
R8	10 Meg	½	♦	BTS-10 Meg	
R9	220KΩ	½		BTS-220K	
R10	220KΩ	½		BTS-220K	
R11	100KΩ	½		BTS-100K	
R12	2200Ω	½		BTS-2200	
R13	220KΩ	½		BTS-220K	
R14	2200Ω	½		BTS-2200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MEISSNER PART No.	IRC PART No.	
R15	220KΩ	½		BTS-220K	
R16	18KΩ	½		BTS-18K	
R17	27KΩ	½		BTS-27K	
R18	470KΩ	½		BTS-470K	
R19	240Ω	2			
R20	470KΩ	½		BTS-470K	
R21	220KΩ	½		BTS-220K	
R22	47KΩ	½		BTS-47K	
R23	39KΩ	½		BTS-39K	
R24	2200Ω	2		BTB-2200	

♦ Items R8, C13 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	MEISSNER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @.66A	660VCT .085ADC	5VAC @ 2A	6.3VAC @1.35A SEC.4 6.3VAC @1.7A	T-53423					T-53423

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MEISSNER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	7.8KΩ	16Ω tap @ 8Ω, 4Ω	T-53424			S-31A①	H4103 ①	22S93 ①	① Drill new mounting holes.

MISCELLANEOUS

ITEM No.	PART NAME	MEISSNER PART No.	NOTES
M1	Switch Knob Knob	29549 29633 29634	Input Selector Plain With dot

CHASSIS—BOTTOM VIEW

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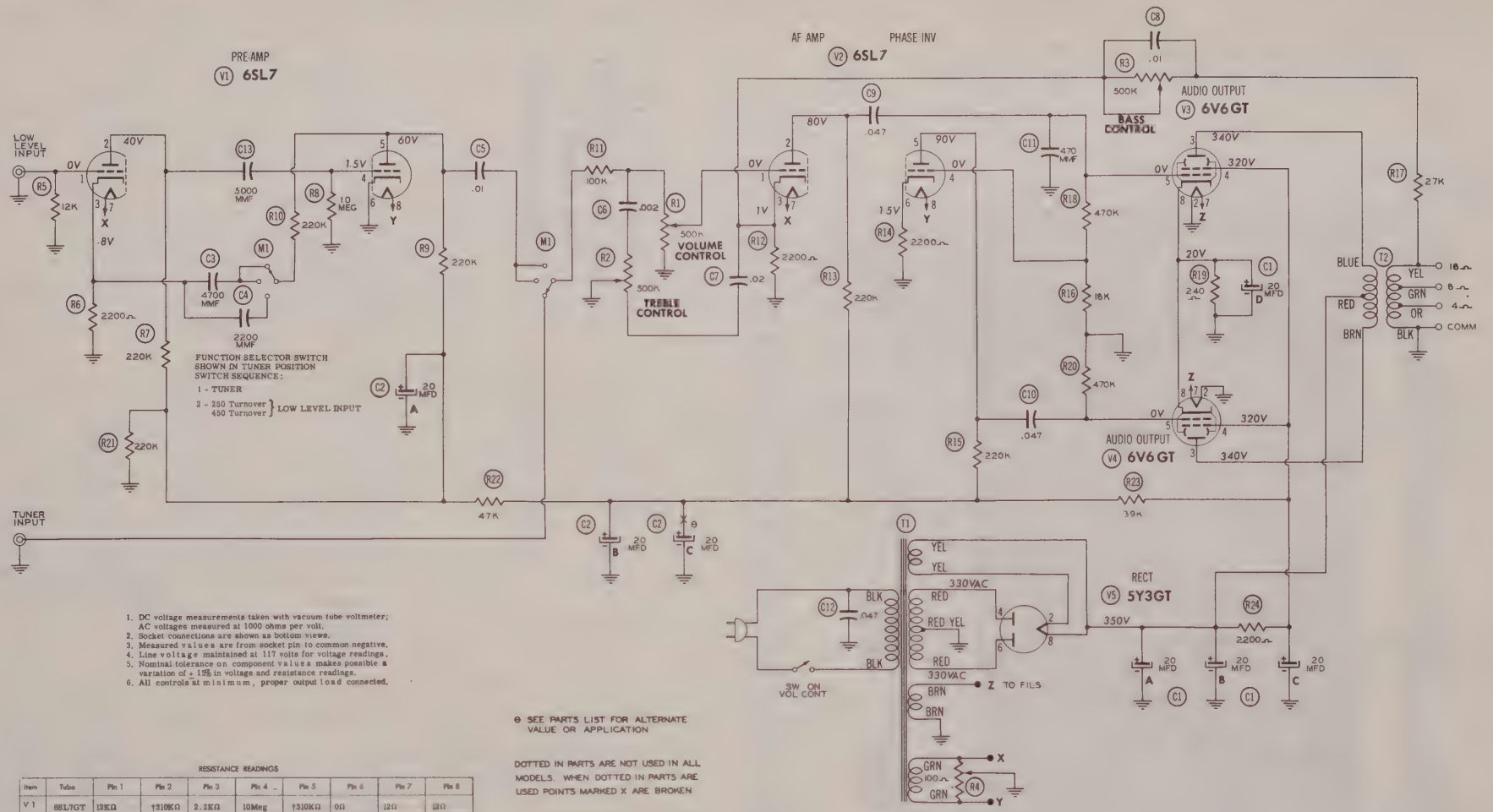
MEISSNER
MODEL 9-1160



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	12KΩ	†310KΩ	2.2KΩ	10Meg	†310KΩ	0Ω	12Ω	12Ω
V 2	6SL7GT	500KΩ	†260KΩ	2.2KΩ	18KΩ	†260KΩ	2.2KΩ	.1Ω	0Ω
V 3	6V6GT	0Ω	0Ω	†225Ω	†2.2KΩ	490KΩ	†260KΩ	.1Ω	240Ω
V 4	6V6GT	0Ω	0Ω	†225Ω	†2.2KΩ	470KΩ	INF	.1Ω	240Ω
V 5	5Y3GT	INF	100KΩ	INF	130Ω	INF	130Ω	INF	100KΩ

† MEASURED FROM PIN 2 OF V5

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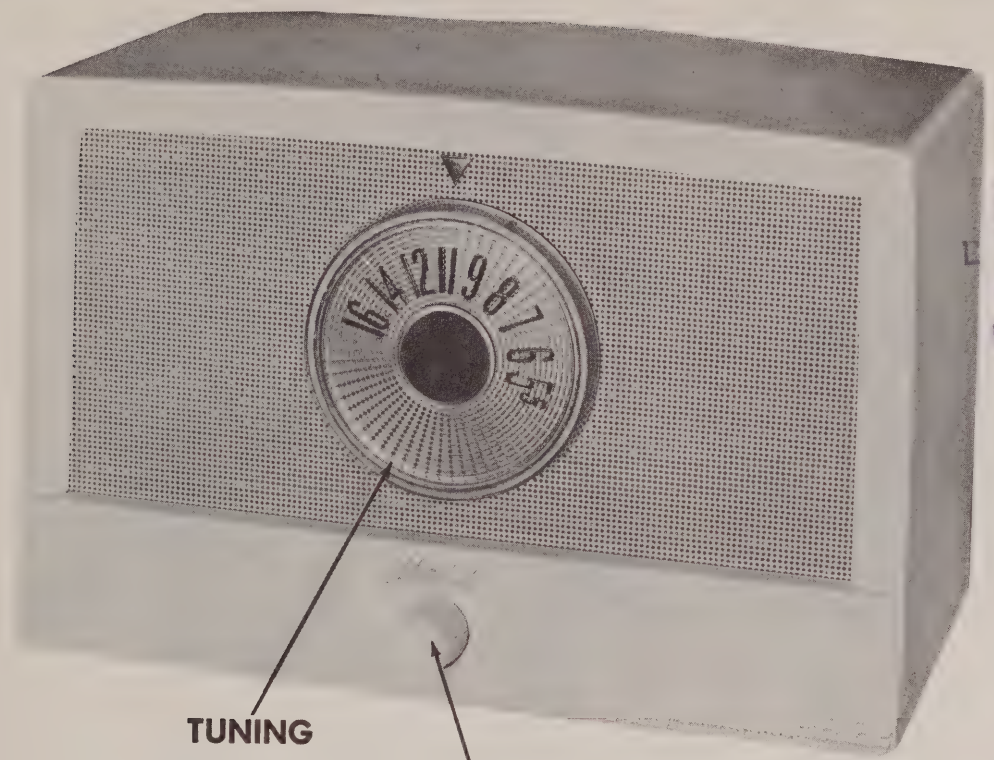
MITCHELL
MODELS 1274, 1275



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MITCHELL
MODELS 1274, 1275

TRADE NAME	Mitchell Model 1274, 1275
MANUFACTURER	Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 6C4 Osc., 12AU6 Mixer, 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to grid (pin 1) of mixer (V2). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	100MMF	Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	"	1400KC	1400KC	"	A6	"

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PARTS LIST AND DESCRIPTIONS

MITCHELL MODEL 1274

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MITCHELL PART No.	STANDARD REPLACEMENT		
V1	Oscillator	6C4	6C4	6BG	
V2	Mixer	12AU6	12AU6	7BK	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V5	Audio Output	50C5	50C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	N-7889	PRS150/50-30		BBRD5315		2N520	TVA-2450	Blue Red
B	30	150								
C2	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.01	400	N-1344	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C4	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	100		N-6015	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C7	.005	600	N-4894	P688-005	DD-502	K080	801-005	DC-525	5HK-D5	
C8A	5000									
B	250		♦N-8215	♦PA-112-2	♦PC-71	♦112TM2	♦1406-02		♦T-4	
C										
C9	.02	400	N-1376	P488-02		CUB4S2		PT412	4TM-S2	
C10	.05	400	N-1346	489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	
C11	.08	200	N-8092							

♦ Items C8A, C8B, C8C, R9A and R9B are combined in one unit.
When replacing items individually items C8B and C8C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500Ω	½	N-7984-P	Q13-133	A47-500K-Z	AB-60	U-48	Volume-Note 1
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A

Note 1. Some models may use alternate control Part No. N-7984.

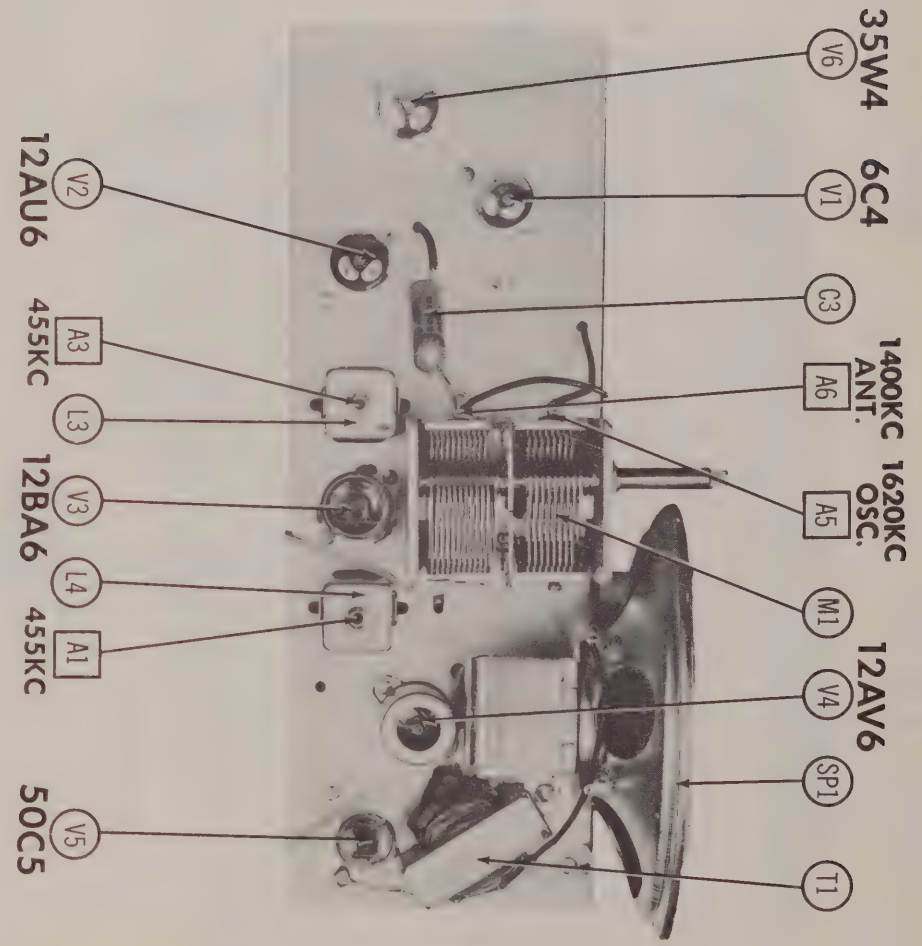
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MITCHELL PART No.	IRC PART No.	
R2	47KΩ	½	N-4063	BTS-47K	
R3	3.3Meg	½	N-4062	BTS-3.3Meg	
R4	47KΩ	½	N-4063	BTS-47K	
R5	68Ω	½	N-6485	BTS-68	
R6	1 Meg	½	N-1262	BTS-1Meg	
R7	22KΩ	½	N-6012	BTS-22K	
R8	6.8Meg	½	N-4028	BTS-6.8Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MITCHELL PART No.	IRC PART No.	
R9A	220KΩ	½	♦N-8215	BTS-220K	
B	470KΩ	½		BTS-470K	
R10	180Ω	½	N-4067	BTS-180	
R11	820Ω	½		BTS-820	Note 1
R12	22Ω	1	N-4713		
R13	33Ω	½	N-4022	BTS-33	

Note 1. Some models may use a 1000Ω resistor in this application.
♦ Items R9A, R9B, C8A, C8B, C8C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MITCHELL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.2Ω	N9430	A-3336	A-3031		Z1103	24S50A	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MITCHELL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.2Ω		ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

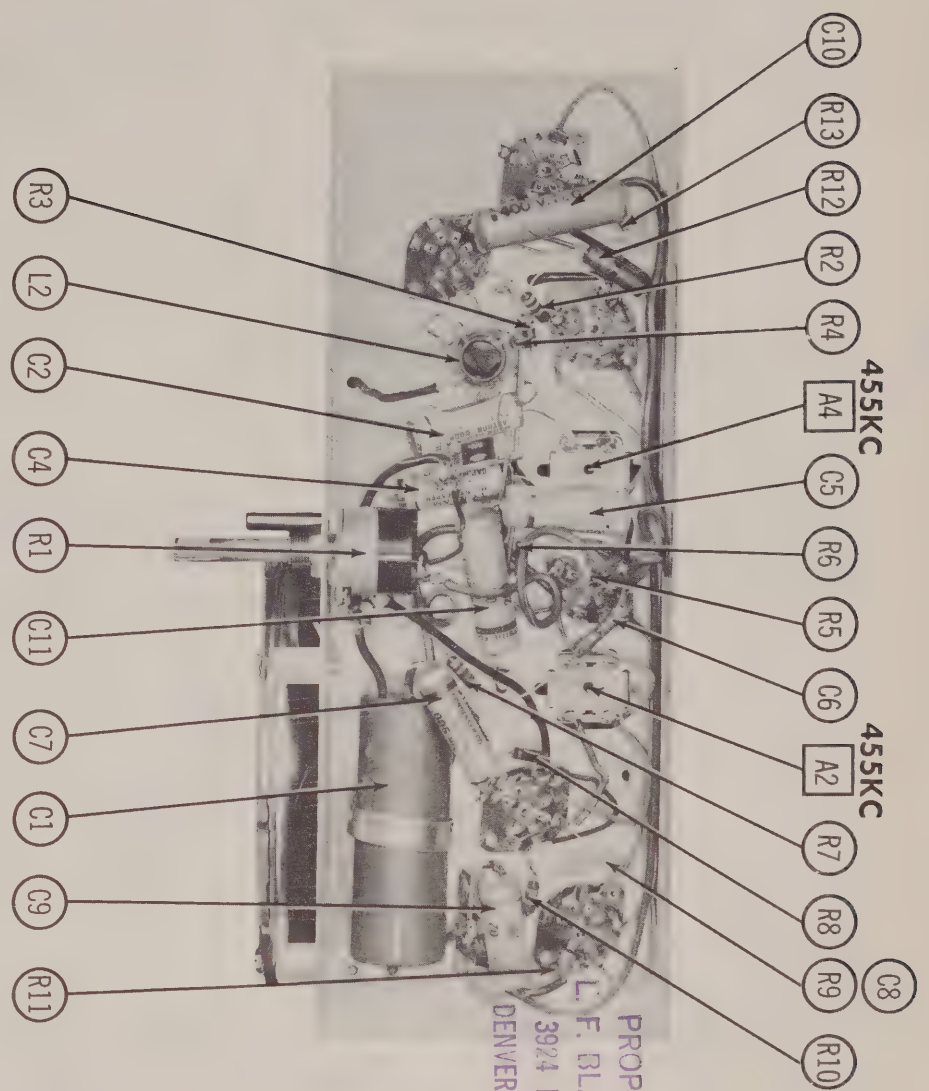
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MITCHELL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.3Ω	2.3Ω	N-8002				Includes cabinet back
L2	Osc. Coil	4.4Ω *	7.5Ω	N-8571	14-1073 ♦		69-Osc. ■	
L3	Input IF	14Ω	14Ω	N-7981	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	14Ω	N-7981	16-6758	BC-353	12-C2	

* Tapped @ .2Ω
■ Drill mounting hole.
▲ Leads suff. mounting support.

MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M1	Tuning cap.	N-9431	20-407MMF; 26-153MMF
	Cabinet	# 455	Mahogany-plastic-Model 1274
	Cabinet	# 454	White-plastic-Model 1275
	Knob	N-8432	Volume-on-off-mahogany-plastic-model 1274
	Knob	N-8431	Volume-on-off white-plastic - model 1275
	Knob	N-9488	Tuning-Gold

CHASSIS—BOTTOM VIEW



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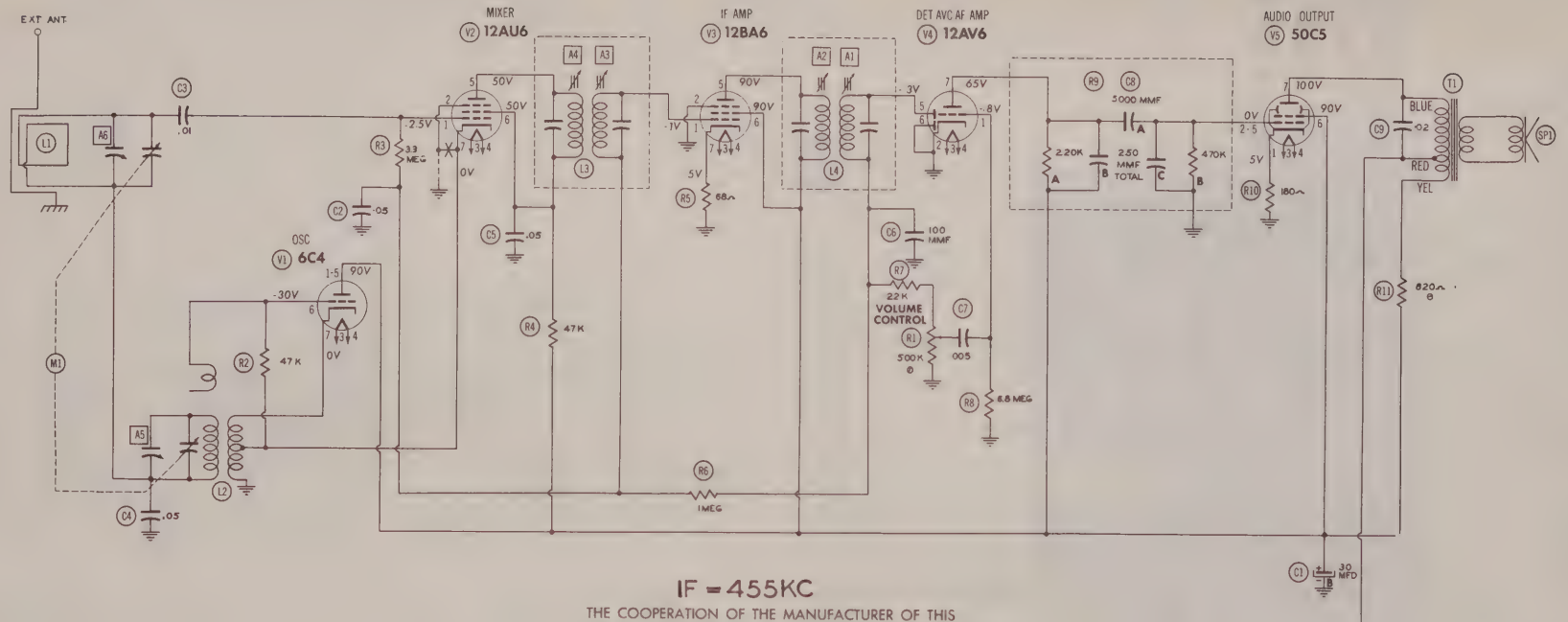
3924 MEADE ST.
DENVER, COLORADO

MITCHELL MODEL 1274



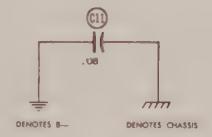
IF = 455KC

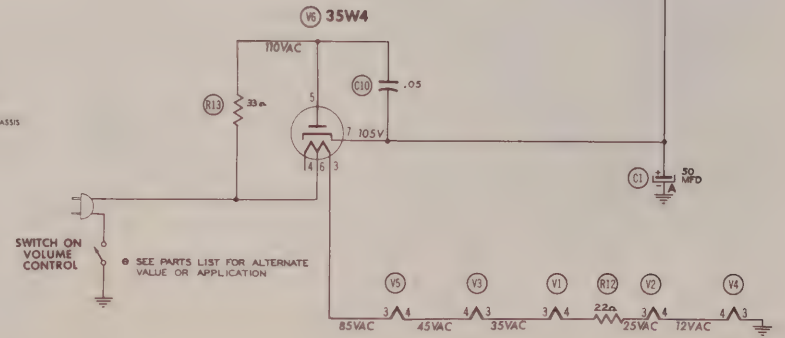
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6C4	†825Ω	INF	55Ω	50Ω	†825Ω	47KΩ	4.4Ω
V 2	12AU6	4.8Meg	.2Ω	25Ω	12Ω	†47KΩ	†47KΩ	.2Ω
V 3	12BA6	1.5Meg	0Ω	55Ω	70Ω	†825Ω	†825Ω	68Ω
V 4	12AV6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	0Ω	†220KΩ
V 5	50C5	180Ω	470KΩ	120Ω	70Ω	470KΩ	†825Ω	†150Ω
V 6	35W4	INF	INF	120Ω	155Ω	185Ω	150Ω	50KΩ

† MEASURED FROM PIN 7 OF V6





1. DC voltage measurements taken with vacuum tube voltmeter
AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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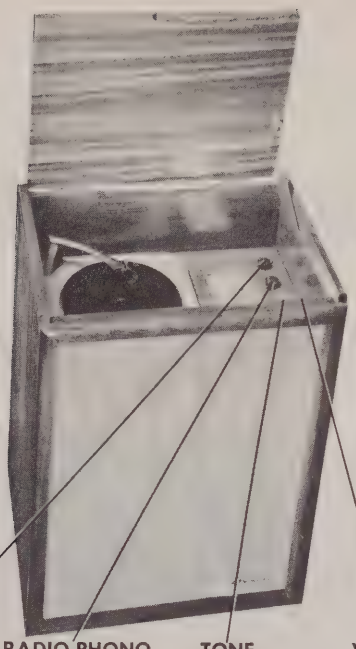
DENVER, COLO.

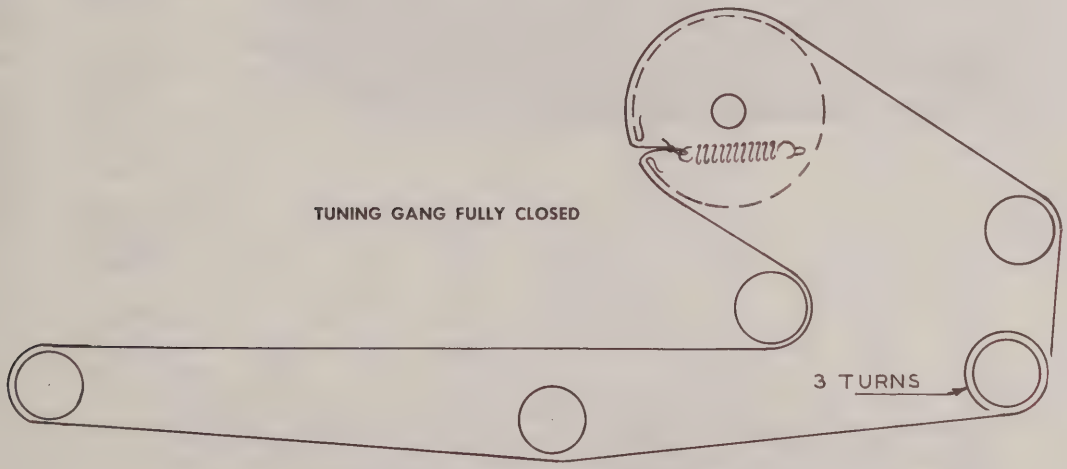
OLYMPIC
MODELS 572B, M



OLYMPIC
MODELS 572B, M

TRADE NAME	Olympic Models 572B, M,
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th. Ave., Long Island City 1, N.Y.
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver With 3 Speed Automatic Record Changer
TUBES (Ten)	Types 6AG5 RF Amp., 6BE6 Conv., 6BA6 AM FM IF Amp., 6BA6 2nd. FM IF Amp., 6AL5 Ratio Det., 6SQ7 AM Det.-AVC-Phase Inv., 6SQ7 AF Amp.-Driver, (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles
TUNING RANGE - BROADCAST	535-1700KC FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT RX2875 - SEE V-M MODEL 950-PHOTOFACT SET #216 - FOLDER 11 OR RECORD CHANGER MANUAL CM-5.



DIAL CORD STRINGING

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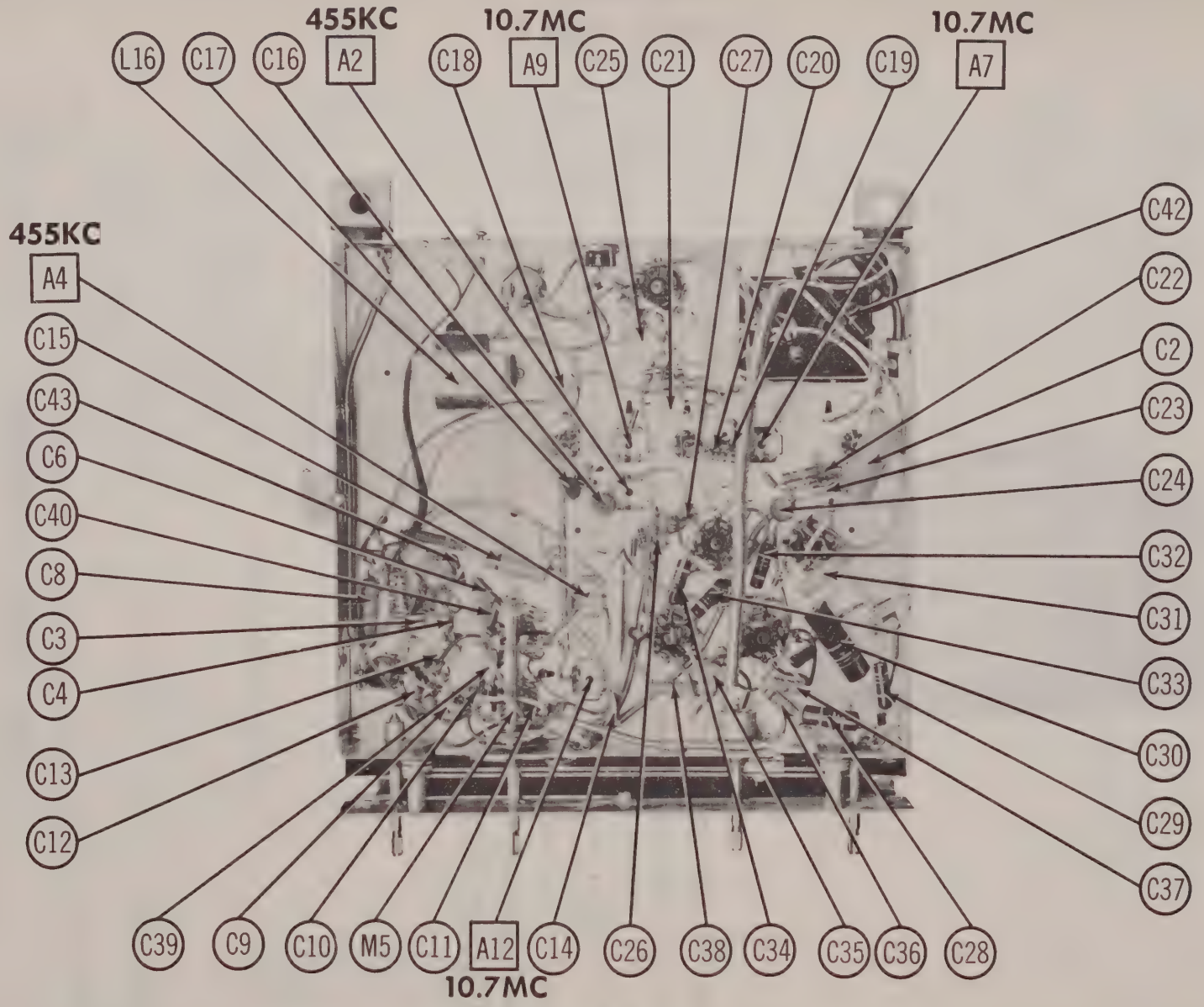
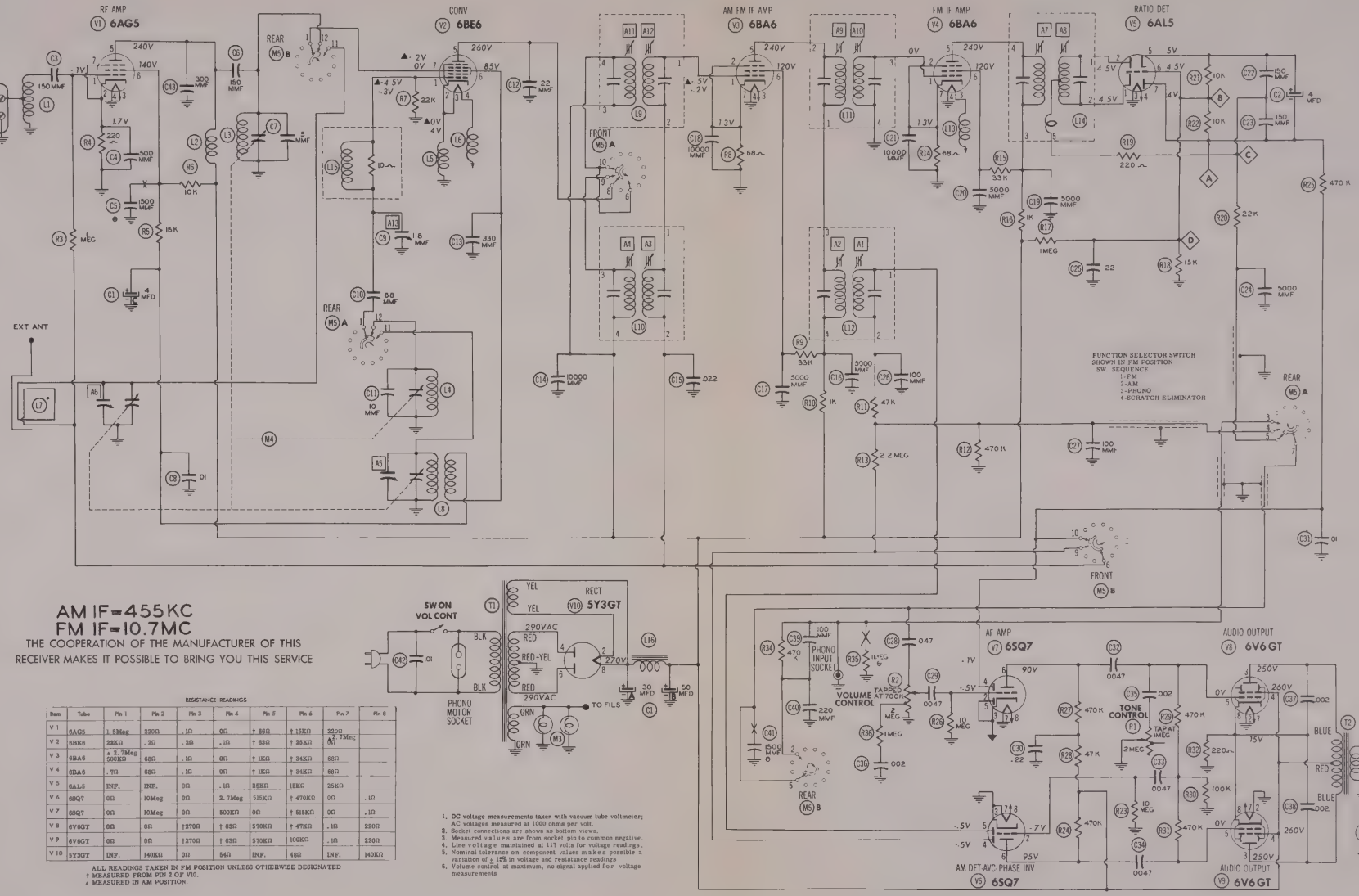


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AG5	1.5Meg	220Ω	.1Ω	0Ω	↑ 66Ω	↑ 15KΩ	220Ω	
V 2	6BE6	22KΩ	.2Ω	.2Ω	.1Ω	↑ 68Ω	↑ 25KΩ	▲ 2.7Meg	
V 3	6BA6	▲ 2.7Meg 500KΩ	68Ω	.1Ω	0Ω	↑ 1KΩ	↑ 34KΩ	68Ω	
V 4	6BA6	.7Ω	68Ω	.1Ω	0Ω	↑ 1KΩ	↑ 34KΩ	68Ω	
V 5	6AL5	INF.	INF.	0Ω	.1Ω	35KΩ	15KΩ	25KΩ	
V 6	6SQ7	0Ω	10Meg	0Ω	2.7Meg	515KΩ	↑ 470KΩ	0Ω	.1Ω
V 7	6SQ7	0Ω	10Meg	0Ω	500KΩ	0Ω	↑ 515KΩ	0Ω	.1Ω
V 8	6V6GT	0Ω	0Ω	↑270Ω	↑ 63Ω	570KΩ	↑ 47KΩ	.1Ω	220Ω
V 9	6V6GT	0Ω	0Ω	↑270Ω	↑ 63Ω	570KΩ	100KΩ	.1Ω	220Ω
V 10	5Y3GT	INF.	140KΩ	0Ω	54Ω	INF.	48Ω	INF.	140KΩ

ALL READINGS TAKEN IN FM POSITION UNLESS OTHERWISE DESIGNATED
↑ MEASURED FROM PIN 2 OF V10.
▲ MEASURED IN AM POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

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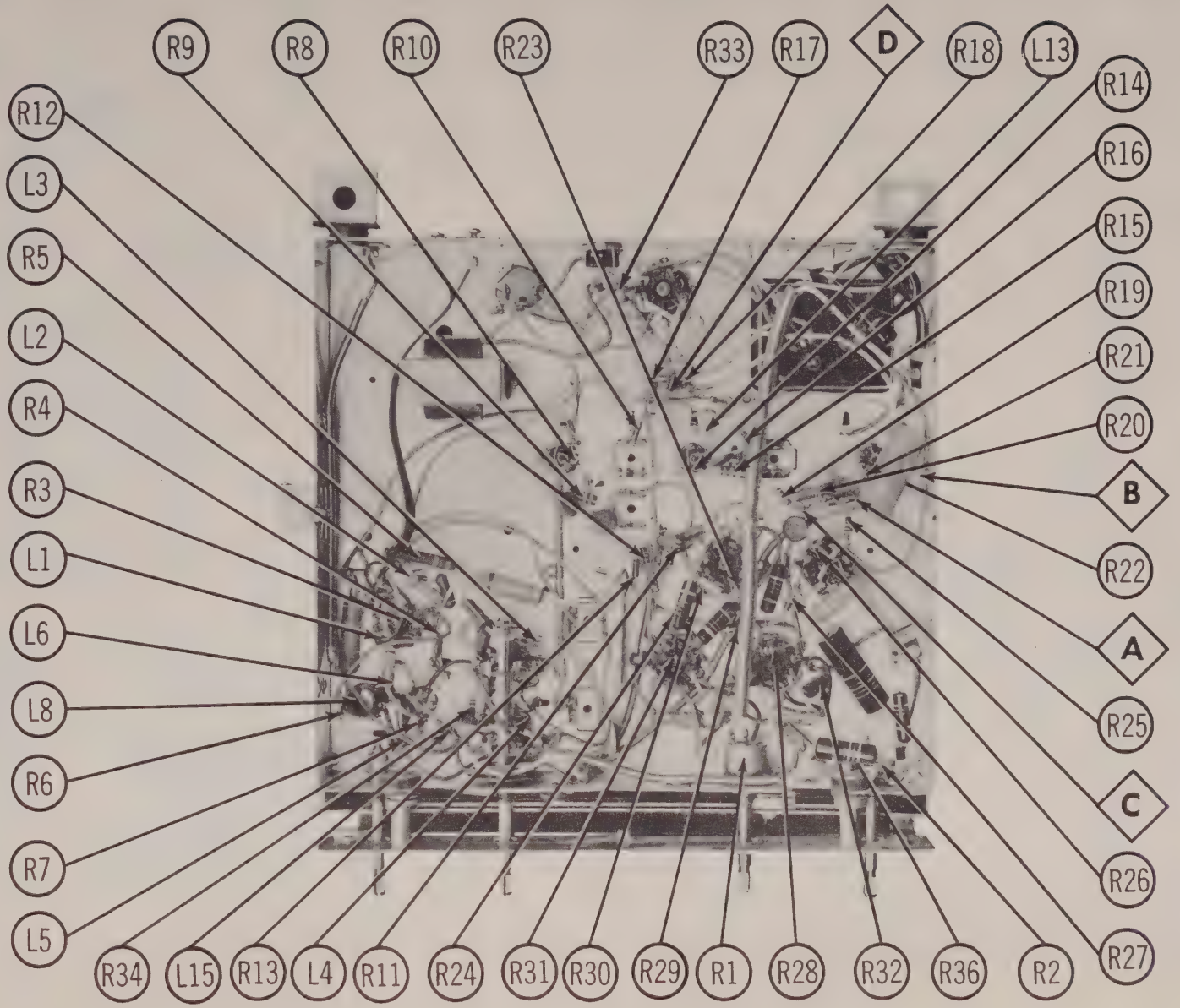

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
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3984 MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.		Loop	1500KC	"	1500KC	"	A5	"
3.		"	"	"	Tune to 1500KC signal	"	A6	"
4.		"	600KC	"	Tune to 600KC signal	"		Bend slotted antenna rotor plates for maximum output. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.1MFD	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	10.7MC (Unmod)	FM	Tuning gang fully open	DC probe to point (A). Common to point (B).	A7	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point (C). Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	Two turns of wire around 6BE6(V2)	Across ends of two turn loop around 6BE6 (V2).	"	"	"	DC probe to point (A). Common to point (B).	A9, A10, A11, A12	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Two turns of wire around 6BE6 (V2)	Across ends of two turn loop around 6BE6 (V2).	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. Amp. to point (A). Low side to chassis.	A7, A9, A10, A11, A12	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines. Continue alignment with step 8.

FM RF ALIGNMENT

Adjust generator for 30% frequency modulated signal.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
8.	Two 150Ω carbon resistors	Across FM antenna terminals with 150Ω in each lead.	88MC	FM	88MC	Across voice coil	L4	Adjust for maximum output by compressing or expanding coil turns.
9.	"	"	108MC	"	108MC	"	A13	Adjust for maximum deflection. Repeat steps 8 and 9 until proper oscillator tracking is obtained.
10.	"	"	98MC	"	Tune to 98MC signal	"	L1, L3	Adjust for maximum deflection by compressing or expanding coil turns.

FIG. 1

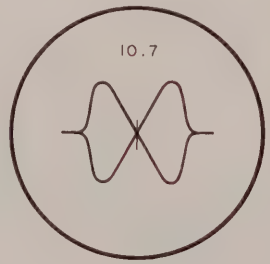


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		OLYMPIC PART No.	STANDARD REPLACEMENT		
V11	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6BE6	6BE6	7CH	
V3	AM FM IF Amp.	6BA6	6BA6	7BK	
V4	FM IF Amplifier	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	AM Det-AVC-Phase Inverter	6SQ7	6SQ7	8Q	
V7	AF Amp-Driver	6SQ7	6SQ7	8Q	
V8	Audio Output	6V6GT	6V6GT	7S	
V9	Audio Output	6V6GT	6V6GT	7S	
V10	Rectifier	5Y3GT	5Y3GT	5T	

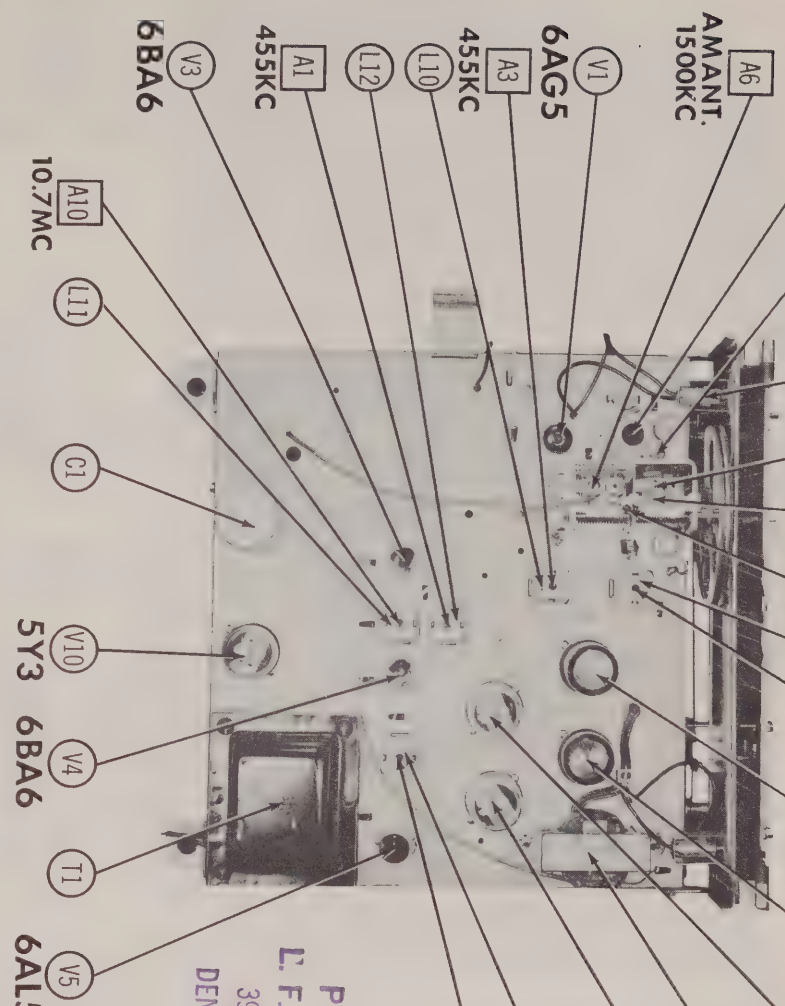
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲30	400	C02350	AFH3-43		D015		FP239 TC70	TVL-3790	
B	■50	400								
C	▲4	400								
C2	4	450		PRS450/4		BR445		TC70	TVA-1701	
C3	150	500		1468-00015		5W5T15		MCB236	1FM-315	
C4	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5GA-T15	
C5	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5GA-T15	Note 1
C6	150	500		1468-00015		5W5T15		MCB236		
C7	5			SI5	D6-050	TP06	GP1K-050	ZT-555	5GA-V5	
C8	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C9	1.8		CE1036-1							
C10	68	500		1468-00007		5W5Q68			MS-47	
C11	10	500		1468-00001		5W5Q1		MCB215	MS-41	
C12	22	500		1468-000025		5W5Q22			MS-42	
C13	330	500		1468-00035		5W5T33		MCB241	1FM-335	
C14	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C15	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C16	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C17	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C18	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C19	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C20	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C21	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C22	150	500		1468-00015		5W5T15		MCB236	1FM-315	
C23	150	500		1468-00015		5W5T15		MCB236	1FM-315	
C24	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C25	.22	200		P288-22		CUB2P22		PT4022	2TM-P22	
C26	100	500		1468-0001		5W5T1		MCB235	1FM-31	
C27	100	500		1468-0001		5W5T1		MCB235	1FM-31	
C28	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C29	.0047	600		P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	Note 2
C30	.22	400		P488-22		CUB4P22		PT4022	4TM-P22	
C31	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C32	.0047	600		P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	Note 2
C33	.0047	600		P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	Note 2
C34	.0047	600		P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	Note 2
C35	.002	600		P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C36	.002	600		P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C37	.002	600		P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C38	.002	600		P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C39	100	500		1468-0001		5W5T1		MCB235	1FM-31	
C40	220	500		1468-0002		5W5T22		MCB237	1FM-32	
C41	1500									Note 2
C42	.01	600		689ZX-01	D6-103	PJ6S1	GP2-333-103	PT611	6TM-S1	
C43	500									

Note 1. Not used in all models.
Note 2. Some models may use a .1MFD @ 400V in this application.

CHASSIS—TOP VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORA

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA OLYMPIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2 Meg	½	K71J-824	Q11-140		ABT-82	UT-451	Tone tapped ⓐ 1 Meg
B	Shaft		Not Req.	Not Req.		AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1		KB-1	US-26	Attach to R1A
R2A	2 Meg	½	PT-567	Q13-139X	AT-115	ABT-80	UT-449	Volume tapped ⓐ 700KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R7A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA OLYMPIC PART No.	IRC PART No.	NOTES
R3	1 Meg	½		BTS-1 Meg	
R4	220Ω	½		BTS-220	
R5	15KΩ	2		BTB-15K	
R6	10KΩ	1		BTA-10K	
R7	22KΩ	1½		BTS-22K	
R8	68Ω	½		BTS-68	
R9	33KΩ	1		BTA-33K	
R10	1000Ω	½		BTS-1000	
R11	47KΩ	½		BTS-47K	
R12	470KΩ	½		BTS-470K	
R13	2.2Meg	1½		BTS-2.2Meg	
R14	68Ω	½		BTS-68	
R15	33KΩ	1		BTA-33K	
R16	1000Ω	½		BTS-1000	
R17	1 Meg	½		BTS-1 Meg	
R18	15KΩ	1½		BTS-15K	
R19	220Ω	½		BTS-220	
R20	22KΩ	1		BTA-22K	
R21	10KΩ	½		BTS-10K	
R22	10KΩ	½		BTS-10K	
R23	10 Meg	½		BTS-10Meg	
R24	470KΩ	½		BTS-470K	
R25	470KΩ	½		BTS-470K	
R26	10 Meg	½		BTS-10 Meg	
R27	470KΩ	½		BTS-470K	
R28	47KΩ	½		BTS-47K	
R29	470KΩ	½		BTS-470K	
R30	100KΩ	½		BTS-100K	
R31	470KΩ	½		BTS-470K	
R32	220Ω	2			
R33	47KΩ	½		BTS-47K	Note 1
R34	470KΩ	½		BTS-470K	
R35	1 Meg	½		BTS-1 Meg	Note 1
R36	1 Meg	½		BTS-1 Meg	

Note 1. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA OLYMPIC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ⓐ .37A	570VCT .115ADC	5VAC ⓐ 2A	6.3VAC ⓐ 3.2A	TR2155	PM-8405				T22R05

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA OLYMPIC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	10KΩ CT	3.9Ω	TR-2156	A-3830	A-2936	S-15X	Z1011	24S61 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA OLYMPIC PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3.9Ω	SK-3279	12J11	12A31	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA OLYMPIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0ΩCT		CL2178				
L2	FM RF Coil	2.8Ω		CK2446	19-1003		4608	4.7Microhenries; IRC Part No. CL-1
L3	FM RF Coil	0Ω						
L4	FM Osc. Coil	0Ω		CL2179				
L5	Fil. Choke	.22Ω		CK2447	19-1000		4602	.47 Microhenry; IRC Part No. CLA
L6	Fil. Choke	1.8Ω		CK2445	19-1002		4606	2.2Microhenries; IRC Part No. CLA
L7	Loop Ant.	.1Ω	1.2Ω	LP-2176				
L8	AM Osc. Coil	.4Ω	6Ω	CL1466	14-1074	BC-397 *	5480-C *	
L9	1st FM IF	.7Ω	.7Ω	TR-2180	16-3487	FM-254	1463	
L10	1st AM IF	15Ω	15Ω	TR-1644	16-6758	BC-352	12-C1	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA OLYMPIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L11	2nd FM IF	.7Ω	.7Ω	TR-1643	16-3487	FM-254	1463	
L12	2nd AM IF	9.5Ω	9.5Ω	TR-1645	16-6758	BC-353	12-C2	
L13	Fil. Choke	1.8Ω		CK2445	19-1002		4606	2.2 Microhenries; IRC Part No. CLA
L14	Ratio Det.	1.6Ω	.9Ω	TR-1646	17-3488 ■	FM-255	1465	Tertiary winding. 4Ω
L15	Parasitic Suppressor	0Ω						Wound on 10Ω resistor

* Drill mounting holes.
■ Cut out chassis hole and drill mounting holes.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA OLYMPIC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L16	.115ADC	63Ω	1.9HY	CK1361	C-2327	C-2994	C-21X	C5040	21C41

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA OLYMPIC PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		ACD-J	A-1 A-3	W22A	A65MG A62A	96T	0-1 or S-1 and 0-3 or S-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA OLYMPIC PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		* A-85LP or † A-75LP and * A-85 or † A-75	* A-319 or † A-347 or ♦ A-347D and * C-309 or † C-348 or ♦ C-348D	* W-5MGA or † W-5MGS and * W-5A † W-5S	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Dial light	BU-187	Bayonet # 47 (2 used)
M4	Tuning cap.	CV-2106	29-525MMF, 22-195MMF
M5	Switch	SW-2159	AM-FM-Phono
	Knob	KN422	Volume-Walnut
	Knob	KN3163	Volume-Ivory
	Knob	KN423	Off-on-tone Walnut
	Knob	KN3164	Off-on-tone Ivory
	Knob	KN425	Tuning-Walnut
	Knob	KN3165	Tuning-Ivory
	Knob	KN3360	AM-FM-Pnono- Walnut
	Knob	KN3361	AM-FM-Pnono-Ivory
	Dial glass	DL3262-1	

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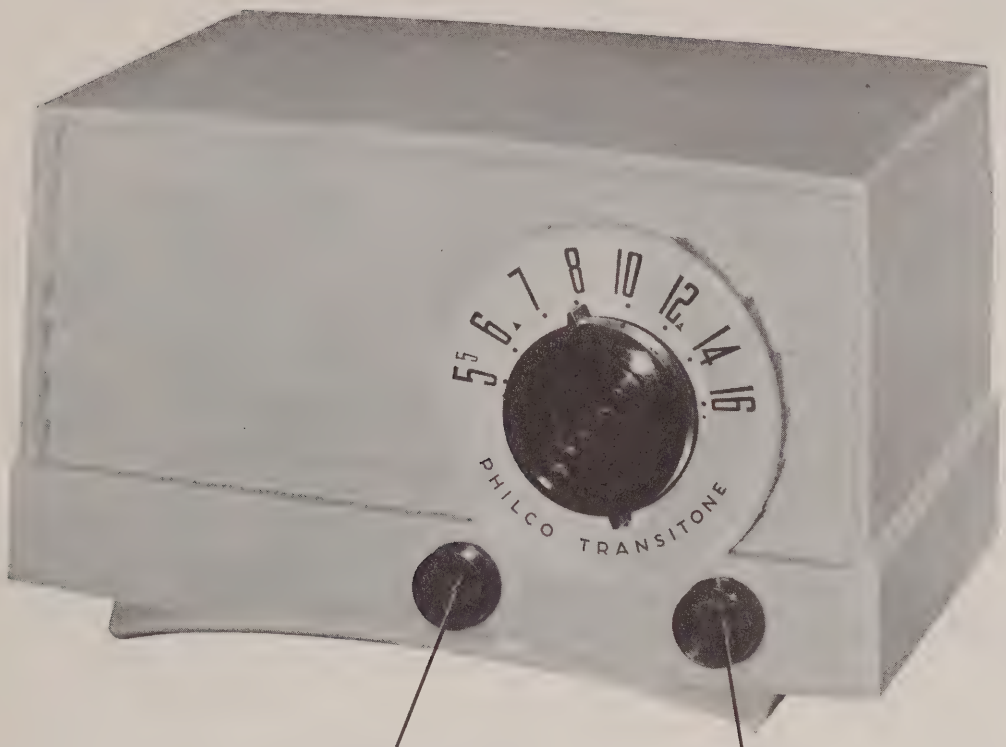
DENVER, COLORADO

PHILCO MODELS B570
(Codes 122, 124), B572 (Code 122)



PHILCO MODELS B570
(Codes 122, 124), B572 (Code 122)

TRADE NAME	Philco Models B570 (Codes 122, 124), B572 (Code 122)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC -1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to grid (pin 7) of converter (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	T1, T2, T3, T4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	T5	"
3.		Loop	1500KC	Tune to 1500KC signal	"	T6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

PHILCO
B570 (Code 122, 124)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	35C5	35C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	30	150	30-2583-1	E58A132		BBRT32-V215				
B	25	150								
C	20	150								
C2	.047	200	30-4650-45	P288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C3	7.5		30-1224-83							
C4	10000		30-1238-2	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C5	.047	200	30-4650-45	P288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C6	5000		30-1238-1	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C7A	5000									
B	250		♦30-6001	♦PA-112-1	♦PC-70	♦112TM1	♦1406-01		♦T-3	
C										
C8	.022	400	30-4650-43	P488-022		CUB4S22		PT4122	4TM-S22	
C9	.1	400	30-4650-47	489ZX-1	DF-104	CUB4P1		PT401	4TM-P1	
C10	100		62-110009001	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	

♦ Items C7A, C7B, C7C, R7A and R7B are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	33-5566-41	Q13-133	A47-500K-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

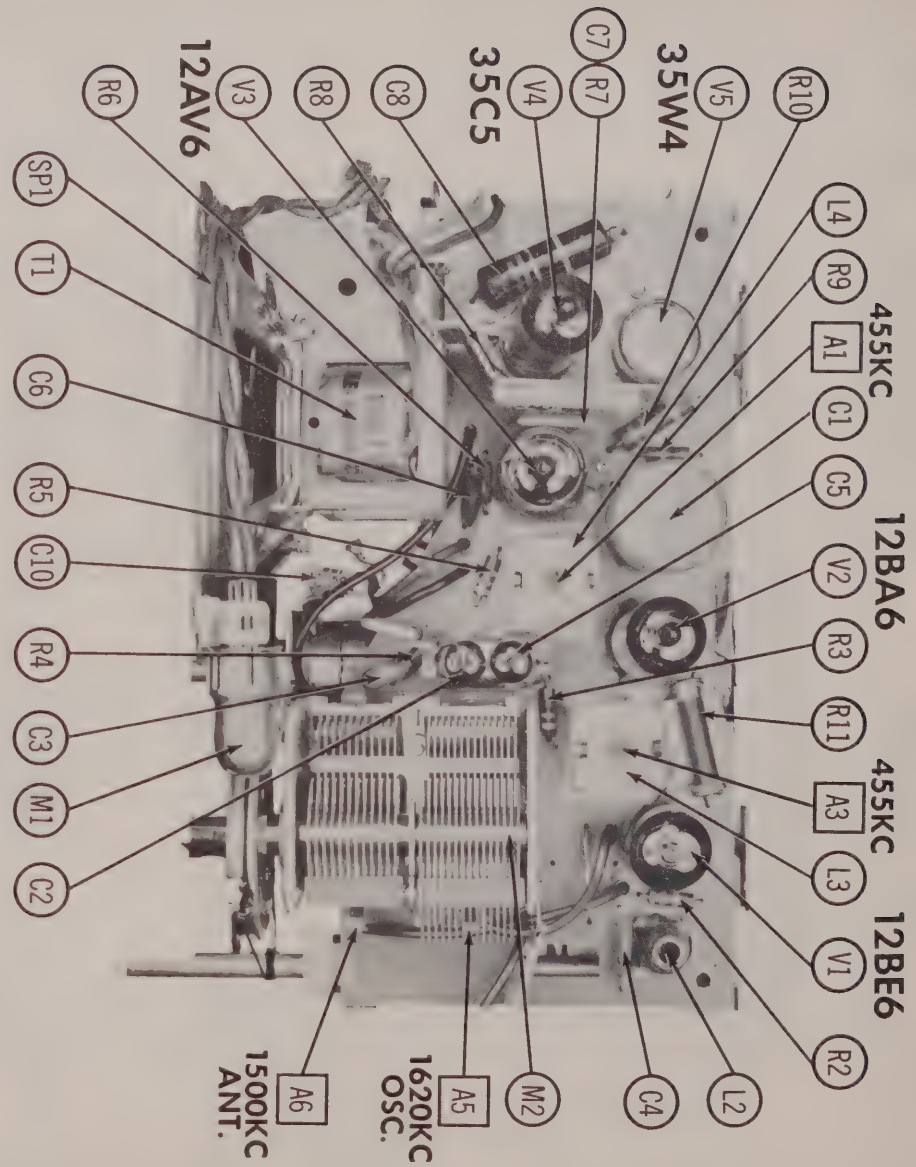
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R2	22KΩ	½	66-3228340	BTS-22K	
R3	4700Ω	½	66-2748340	BTS-4700	
R4	2.2Meg	½	66-5228340	BTS-2.2Meg	
R5	47KΩ	½	66-3478340	BTS-47K	
R6	10 Meg	½	66-6108340	BTS-10 Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R7A	500KΩ	½	♦30-6001		
B	500KΩ	½			
R8	150Ω	½	66-1158340	BTS-150	
R9	1000Ω	½	66-2108340	BTS-1000	
R10	220Ω	1	66-1224340	BTA-220	
R11	100Ω	1	33-1343-3		Note

♦ Items R7A, R7B, C7A, C7B, C7C are combined in one unit.
Note. 100Ω Hot -880Ω @ Room Temperature

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHILCO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.5Ω	32-8384-5	A-3332 ①	A-3025 ①	S-12X ①	Z1101 ①	26S58 ②	① Bend mounting tabs down, file out slots, mount on original mounting bracket. ② Use original channel frame.

SPEAKER

ITEM No.	RATINGS				REPLACEMENT DATA				NOTES
	SIZE	FIELD	V. C. IMP.		PHILCO PART No.	JENSEN PART No.	QUAM PART No.		
SP1	4"	PM	3.5Ω		36-1627-24 36-1627-8 ①	ST-113 Mod. P4-X	4A1		① Alternate speaker

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	2.8Ω		76-8515				Includes cabinet back
L2	Osc. Coil	9.5Ω		32-4582		BC-381 †	70-Osc.†	Tapped @ 1Ω
L3	Input IF	14Ω	14Ω	32-4583	16-6758	BC-352	13-PC1	
L4	Output IF	15Ω	15Ω	32-4584	16-6770	BC-355	12-C6	

† Use secondary winding and tap only.

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Dial Light	54-8806	Includes shield bayonet CB47 (Both models)
M2	Tuning Cap.	31-2751-16	27-498MMF, 21-165MMF (Both Models)
	Cabinet	10-990-3	Cardinal - B570 (Code 122)
	Cabinet	10-990-4	Sand - B570 (Code 122)
	Knob	54-4773-3	Volume/on/off & tuning (Both models)
	Printed Wiring Panel	54-6058	Less components (Both models)
	Cabinet	10926-19	Spruce - B572 (Code 122)
	Cabinet	10926-23	Tangerine B572 (Code 122)
	Dial Back plate	54-4972-2	Spruce - B572 (Code 122)
	Dial Back plate	54-4972	Tangerine B572 (Code 122)
	Dial Scale	54-5147-3	B572 (Code 122)
	Pointer	28-9502	

CHASSIS—BOTTOM VIEW

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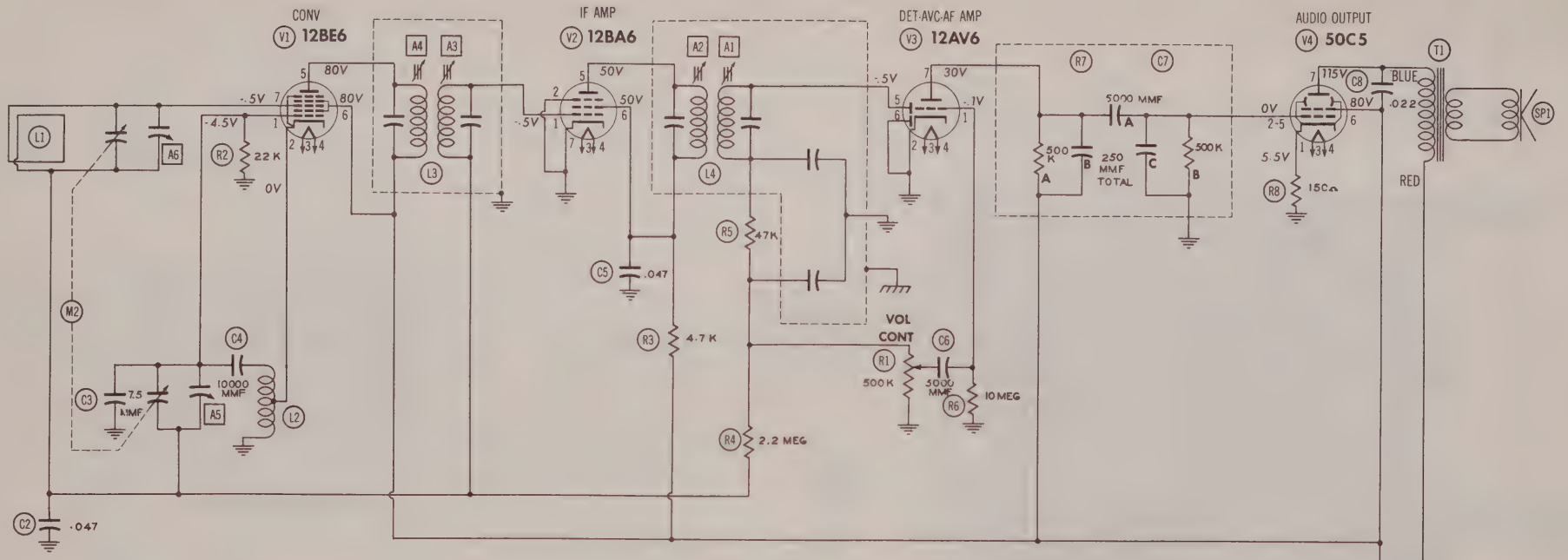
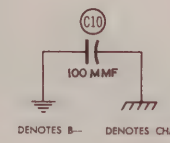
PHILCO
B570 (Code 122, 124)



IF = 455KC

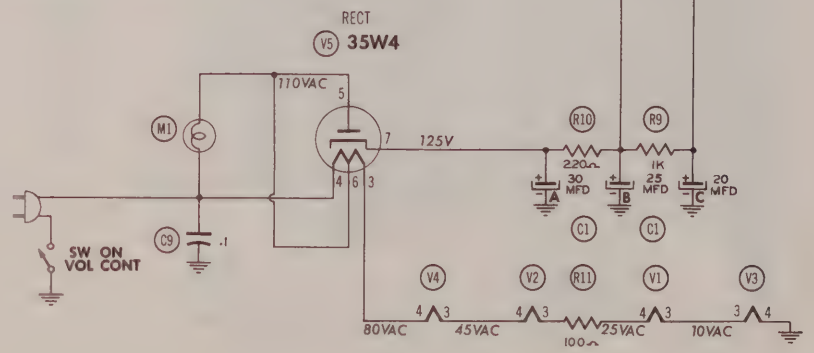
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	12Ω	24Ω	†1.2KΩ	†1.2KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	900Ω	912Ω	†5.9KΩ	†5.9KΩ	0Ω
V 3	12AV6	10Meg	0Ω	12Ω	0Ω	547KΩ	0Ω	†500KΩ
V 4	35C5	150Ω	500KΩ	912Ω	937Ω	500KΩ	†1.2KΩ	†444Ω
V 5	35W4	1KΩ	1KΩ	937Ω	972Ω	958Ω	958Ω	300KΩ

† MEASURED FROM PIN 7 OF V5



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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257-12

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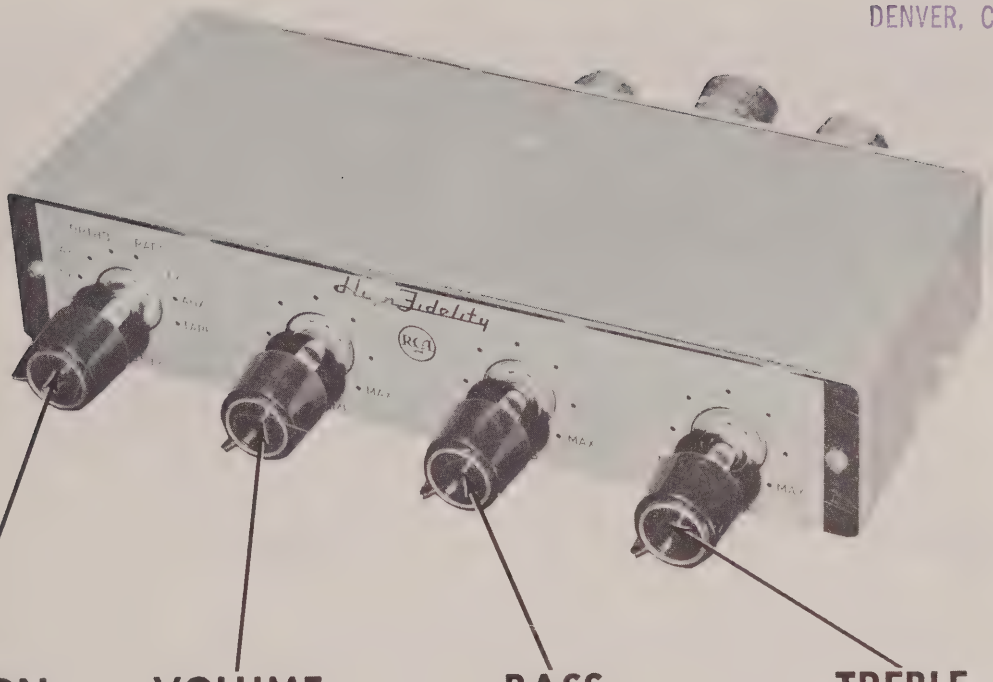
RCA VICTOR
MODELS SV-1 (MI-12150)



RCA VICTOR
MODELS SV-1 (MI-12150)

TRADE NAME	RCA Victor Model SV-1 (MI-12150)
MANUFACTURER	RCA Victor Div., Eng. Products Dept., Radio Corp. of America, Camden, N.J.
TYPE SET	Five Channel Pre-Amplifier and Equalizer
TUBES (Two)	Types 12AY7 Pre-Amp., 12AU7 AF Amp.-Cathode Follower
POWER REQUIRED	8MA @ 250Volts DC & 1.2 Amp. @ 6.3 Volts AC or DC

THIS EQUIPMENT WAS PRIMARILY DESIGNED TO OPERATE IN CONJUNCTION WITH RCA POWER AMPLIFIER MODELS SP-10 OR SP-20.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		RCA Victor PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AY7	12AY7	9A	
V2	AF Amplifier-Cathode Follower	12AU7	12AU7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

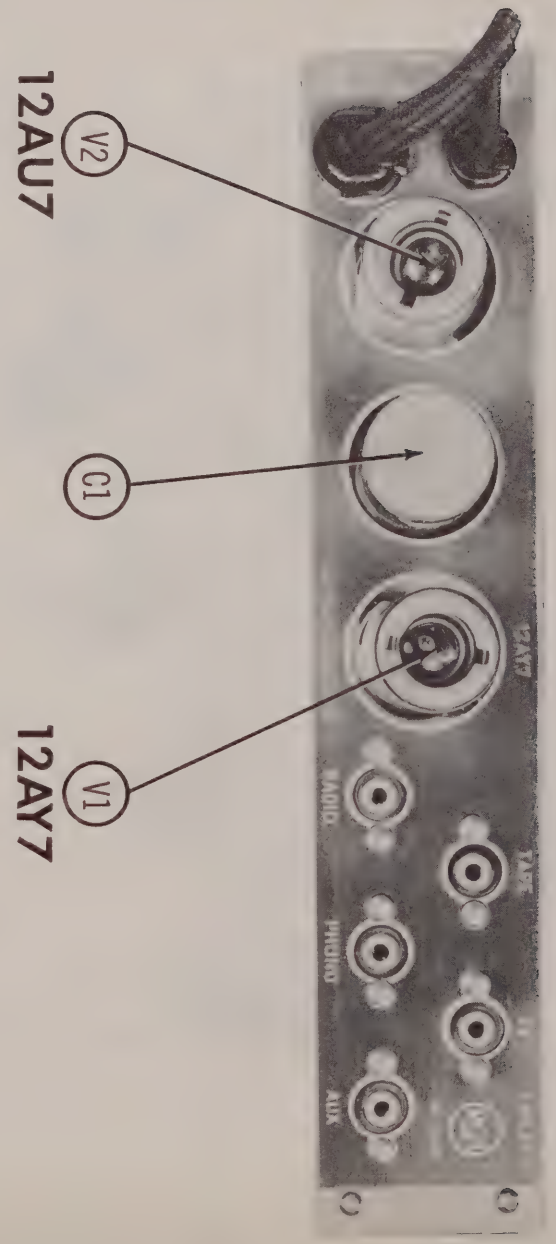
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	450	34889	AFH2-51		B040		FP234	TVL-2755	
B	▲20	450								
C2	25	25	52518	PRS25/25		BR252		TC26	TVA-1205	
C3	25	25	52518	PRS25/25		BR252		TC26	TVA-1205	
C4A	10000		♦99334							
B	150									
C	2500									
C5A	10000		■99335							
B	3500									
C6A	10000		*99333							
B	2500									
C7A	10000		†99332							
B	3500									
C8	.1	400	73551							
C9	.01	400	99661	BPD-01	DD-103	K082	801-01	DC-511	5HK-S1	
C10	.1	400	73551							
C11	470	500	39644			5R5T47				
C12	4700	500	58313			1R5D47				
C13	.01	400	73561							
C14	1000	500	39652	1464-001		1R5D1		MCE251	MS-21	
C15	.47	200	73787							
C16	.47	200	73787							
C17	.01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C18	.033	400	73552	P488-03		CUB4S33		PT4133	4TM-S33	

♦ Items C4A, C4B, C4C, R5A, R5B, R5C and R5D are combined in one unit.
■ Items C5A, C5B, R6A, R6B and R6C are combined in one unit.
* Items C6A, C6B, R7A and R7B are combined in one unit.
† Items C7A, C7B, R8A and R8B are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	100KΩ	2	99337	Q13-128	A47-100K-Z	B-41	U-39	Volume (Carbon)
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	2	99338	Q13-133	A47-500K-Z	B-60	U-48	Bass (Carbon)
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	2	99339	Q13-133	A47-500K-Z	B-60-S	U-48	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A (Carbon)
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R3A (Carbon)
R4A	5000Ω	½	203050	Q11-114	A47-5000-S	AB-10	SU-14	Hum Adj.
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R4A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

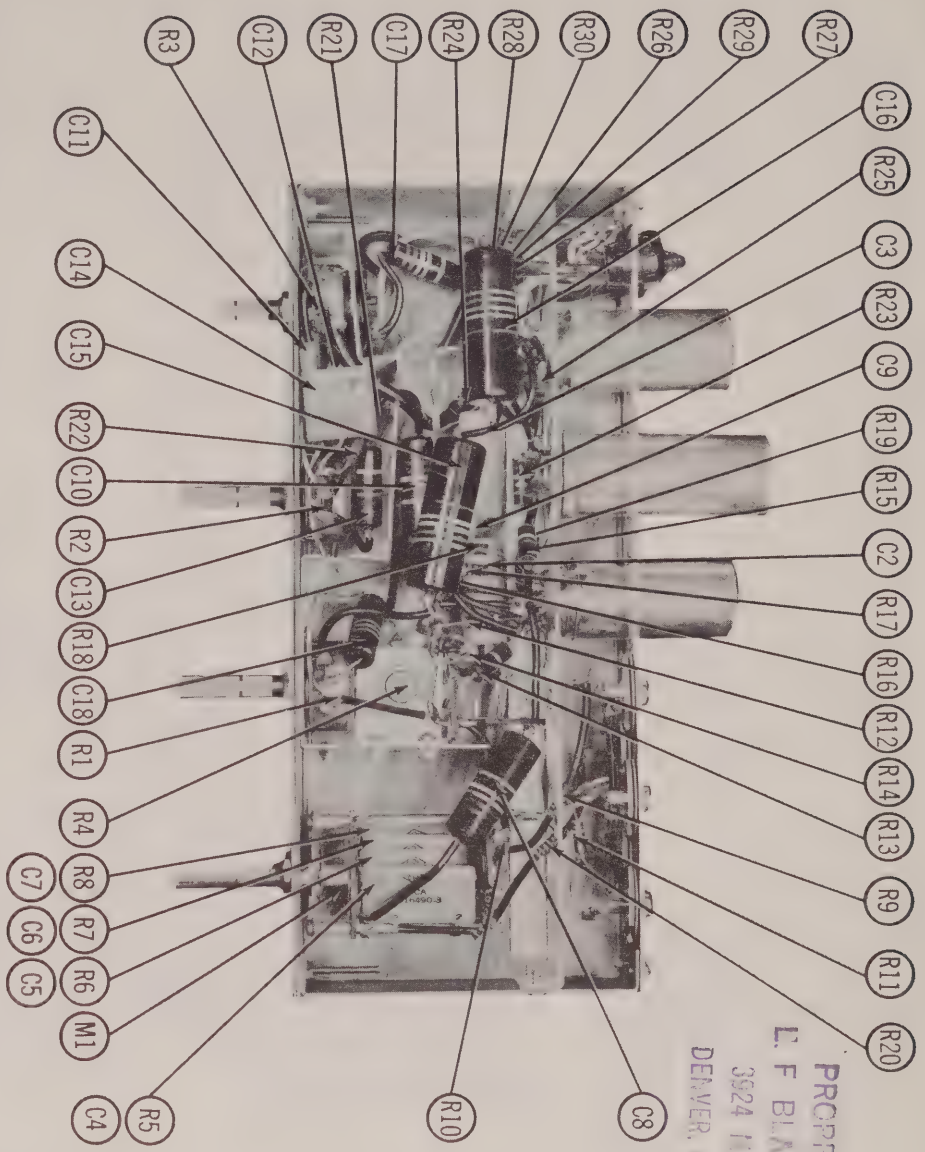
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R5A	470KΩ	1/2	♦99334	BTS-470K	
B	40KΩ	1/2			
C	27KΩ	1/2		BTS-27K	
D	40KΩ	1/2			
R6A	470KΩ	1/2		BTS-470K	
B	22KΩ	1/2	■ 99335	BTS-22K	
C	150KΩ	1/2		BTS-150K	
R7A	470KΩ	1/2	* 99333	BTS-470K	
B	27KΩ	1/2		BTS-27K	
R8A	470KΩ	1/2	† 99332	BTS-470K	
B	22KΩ	1/2		BTS-22K	
R9	330KΩ 5%	1/2	502433	BTS-330K 5%	
R10	100KΩ 5%	1/2	502410	BTS-100K 5%	
R11	62KΩ 5%	1/2	70320	BTS-62K 5%	
R12	47KΩ 5%	1/2	30787	BTS-47K 5%	
R13	10Ω	1	512010		
R14	1000Ω 5%	1	512210	BTA-1000 5%	
R15	100KΩ 5%	1	512410	BTA-100K 5%	
R16	270KΩ	1/2	502427	BTS-270K	
R17	470KΩ 5%	1/2	502447	BTS-470K 5%	
R18	1000Ω 5%	1/2	502210	BTS-1000 5%	
R19	68KΩ 5%	1/2	502368	BTS-68K 5%	
R20	470KΩ 5%	1/2	502447	BTS-470K 5%	
R21	22KΩ 5%	1/2	502322	BTS-22K 5%	
R22	220KΩ 5%	1/2	502422	BTS-220K 5%	
R23	15KΩ 5%	1	512315	BTA-15K 5%	
R24	1200Ω 5%	1/2	502210	BTS-1200 5%	
R25	100KΩ 5%	1/2	502410	BTS-100K 5%	
R26	470KΩ 5%	1/2	502212	BTS-470K 5%	
R27	5600Ω 5%	1/2	502256	BTS-5600 5%	
R28	27KΩ 5%	1/2	502327	BTS-27K 5%	
R29	15KΩ 5%	1	512315	BTA-15K 5%	
R30	1 Meg	1/2		BTS-1 Meg	

♦ Items R5A, R5B, R5C, R5D, C4A, C4B, C4C are combined in one unit.
■ Items R6A, R6B, R6C, C5A, C5B are combined in one unit.
* Items R7A, R7B, C6A, C6B are combined in one unit.
† Items R8A, R8B, C7A, C7B are combined in one unit.

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M1	Switch	99331	Selector

CHASSIS—BOTTOM VIEW



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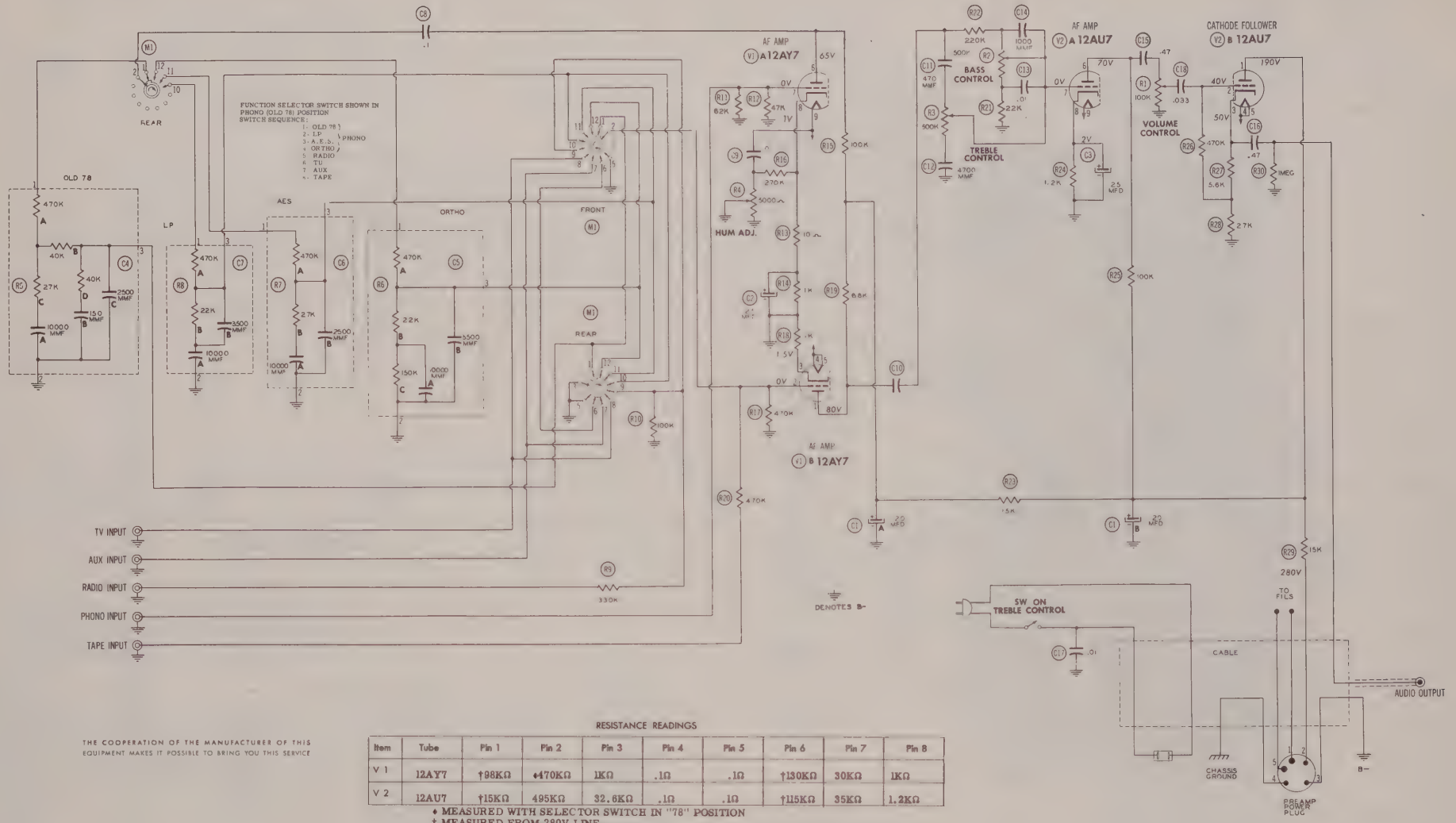

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12AY7	†98KΩ	♦470KΩ	1KΩ	.1Ω	.1Ω	†130KΩ	30KΩ	1KΩ
V 2	12AU7	†15KΩ	495KΩ	32.6KΩ	.1Ω	.1Ω	†115KΩ	35KΩ	1.2KΩ

♦ MEASURED WITH SELECTOR SWITCH IN "78" POSITION
† MEASURED FROM 280V LINE

VOLTAGE & RESISTANCE MEASUREMENTS TAKEN WITH PRE-AMPLIFIER CONNECTED TO RCA MODEL SP-10 POWER AMPLIFIER

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.

257-13

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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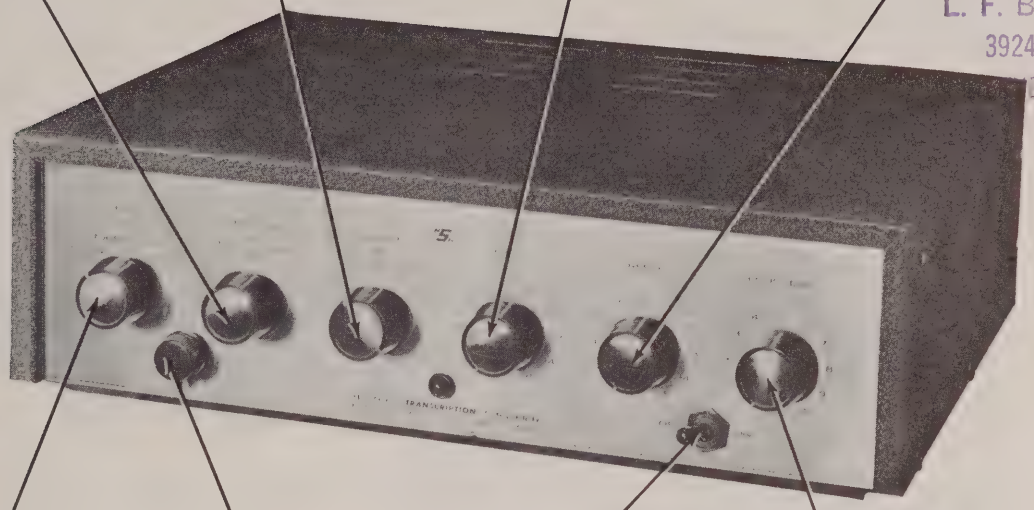
H. H. SCOTT
MODEL 99-A



H. H. SCOTT
MODEL 99-A

TRADE NAME	H.H. Scott Model 99-A
MANUFACTURER	Herman H. Scott, Inc., 385 Putman Ave., Cambridge 39, Mass.
TYPE SET	AC Operated Equalizer-Pre-amplifier & 10 Watt Audio Amplifier
TUBES (Six)	Types 12AX7 Phono Pre-amp., 12AX7 Pre-Amp., 12AU7 AF Amp.-Phase Inverter, (2) 6V6GT Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		SCOTT PART No.	STANDARD REPLACEMENT		
V1	Phono Pre-Amp.	12AX7	12AX7	9A	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	AF Amplifier-Phase Inverter	12AU7	12AU7	9A	
V4	Audio Output	6V6GT	6V6GT	7S	
V5	Audio Output	6V6GT	6V6GT	7S	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

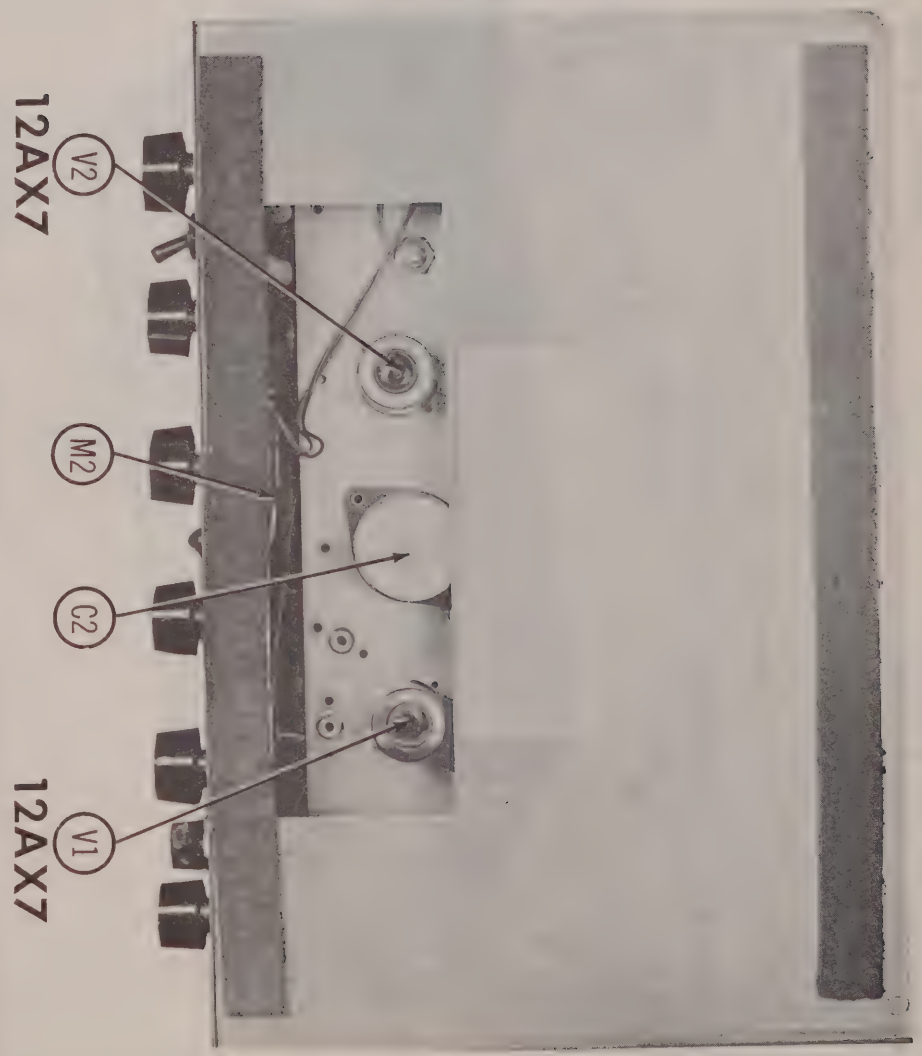
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▰20	475				D013		FP444	R1084	
B	■20	475								
C	▲20	475								
D	20	475								
C2A	▰10	450		AFH4-63		D088		FP426		
B	■10	450								
C	▲25	25								
D	25	25								
C3	10	50		PRS50/10		BR105		TC32	TVA-1304	Note 1
C4	25	25		PRS25/25		BR252		TC26	TVA-1205	
C5	100	500		1468-0001		22R5T1		MC235	MS-31	
C6	180	500		1468-0002		22R5T18		MC237	MS-32	
C7	470	500		1468-0005		5R5T5		MC245	MS-35	
C8	.0015	400		P488-0015	D6-152	CUB4D15	GP2-333-152	PT4215	4TM-D15	
C9	680	500				1R5T68			MS-37	
C10	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C11	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C12	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C13	220	500		1468-0002		22R5T22		MC237	MS-32	
C14	33	500		1468-00003		22R5Q33		MC223	MS-33	
C15	.0022	400		P488-0022	D6-222	CUB4D22	GP2-333-222	PT4222	4TM-D22	
C16	.0022	400		P488-0022	D6-222	CUB4D22	GP2-333-222	PT4222	4TM-D22	
C17	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C18	100	500		1468-0001		22R5T1		MC235	MS-31	
C19	.0022	400		P488-0022	D6-222	CUB4D22	GP2-333-222	PT4222	4TM-D22	
C20	.001	600		P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C21	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C22	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C23	47	500		1468-00005		22R5Q47		MC225	MS-45	
C24	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C25	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C26	470	500		1468-0005		5R5T47		MC245	MS-35	
C27	220	500		1468-0002		22R5T22		MC237	MS-32	
C28	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C29	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	

Note 1. Some models may use a 25MFD @ 25V in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RCV-500K-3	Q13-133	A47-500K-Z	B-60	U-48	Pickup level adj.
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	1Meg	½	RCV-1Meg-4	Q13-137	A47-1Meg-Z	B-70	U-53	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½	RCV-1Meg-4	Q13-137	A47-1Meg-Z	B-70	U-53	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4	500KΩ	½	RCV-500KTT-4F				UDT283	Loudness tapped @ 260K & 110KΩ
R5A	500KΩ	½	RCV-500-5	Q11-103	A47-500-S	AB-4		Hum Balance
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1		Attach to R5A
R6A	100KΩ	½	RCV-100K-2	Q11-128	A47-100K-S	AB-40	SU-41	Signal Balancing
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R6A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SCOTT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R7	47KΩ	½		BTS-47K	
R8	15KΩ	½		BTS-15K	
R9	2700Ω	½		BTS-2700	
R10	270KΩ	½		BTS-270K	
R11	1Meg	½		BTS-1Meg	
R12	2700Ω	½		BTS-2700	
R13	270KΩ	½		BTS-270K	
R14	1Meg	½		BTS-1Meg	
R15	22Meg	½		BTS-22Meg	
R16	1.8Meg	½		BTS-1.8Meg	
R17	270KΩ	½		BTS-270K	
R18	47KΩ	½		BTS-47K	
R19	1Meg	½		BTS-1Meg	
R20	470KΩ	½		BTS-470K	
R21	2.2Meg	½		BTS-2.2Meg	
R22	3.3Meg	½		BTS-3.3Meg	
R23	2.2Meg	½		BTS-2.2Meg	
R24	1000Ω	½		BTS-1000	
R25	47KΩ	1		BTA-47K	
R26	220KΩ	½		BTS-220K	
R27	100KΩ	½		BTS-100K	
R28	22KΩ	½		BTS-22K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SCOTT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R29	1500Ω	½		BTS-1500	
R30	100KΩ	1		BTA-100K	
R31	15KΩ	½		BTS-15K	
R32	330KΩ	½		BTS-330K	
R33	47KΩ	½		BTS-47K	
R34	100KΩ	½		BTS-100K	
R35	470KΩ	½		BTS-470K	
R36	33KΩ	½		BTS-33K	
R37	2.7Ω	1			
R38	1500Ω	½		BTS-1500	
R39	15KΩ	½		BTS-15K	
R40	100KΩ	1		BTA-100K	
R41	1500Ω	½		BTS-1500	
R42	100KΩ	1		BTA-100K	
R43	47KΩ	½		BTS-47K	
R44	4700Ω	½		BTS-4700	
R45	250Ω	4		PW4-250	
R46	220KΩ	½		BTS-220K	
R47	470KΩ	½		BTS-470K	
R48	2.7Ω	1			
R49	470Ω	½		BTS-470	
R50	220Ω	2		BTB-220	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA SCOTT PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .75A	680VCT .095ADC	5VAC @ 2A	6.3VAC @ 2.4A		PM-8410①	P-2953 ①	R-14B ①	P9315①	24R05 ①

① Tape 6.3V center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SCOTT PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	10KΩ CT	500Ω tap @ 150Ω, 16Ω, 8Ω, 4Ω Sec. 2 55Ω Res.							150Ω tap not used

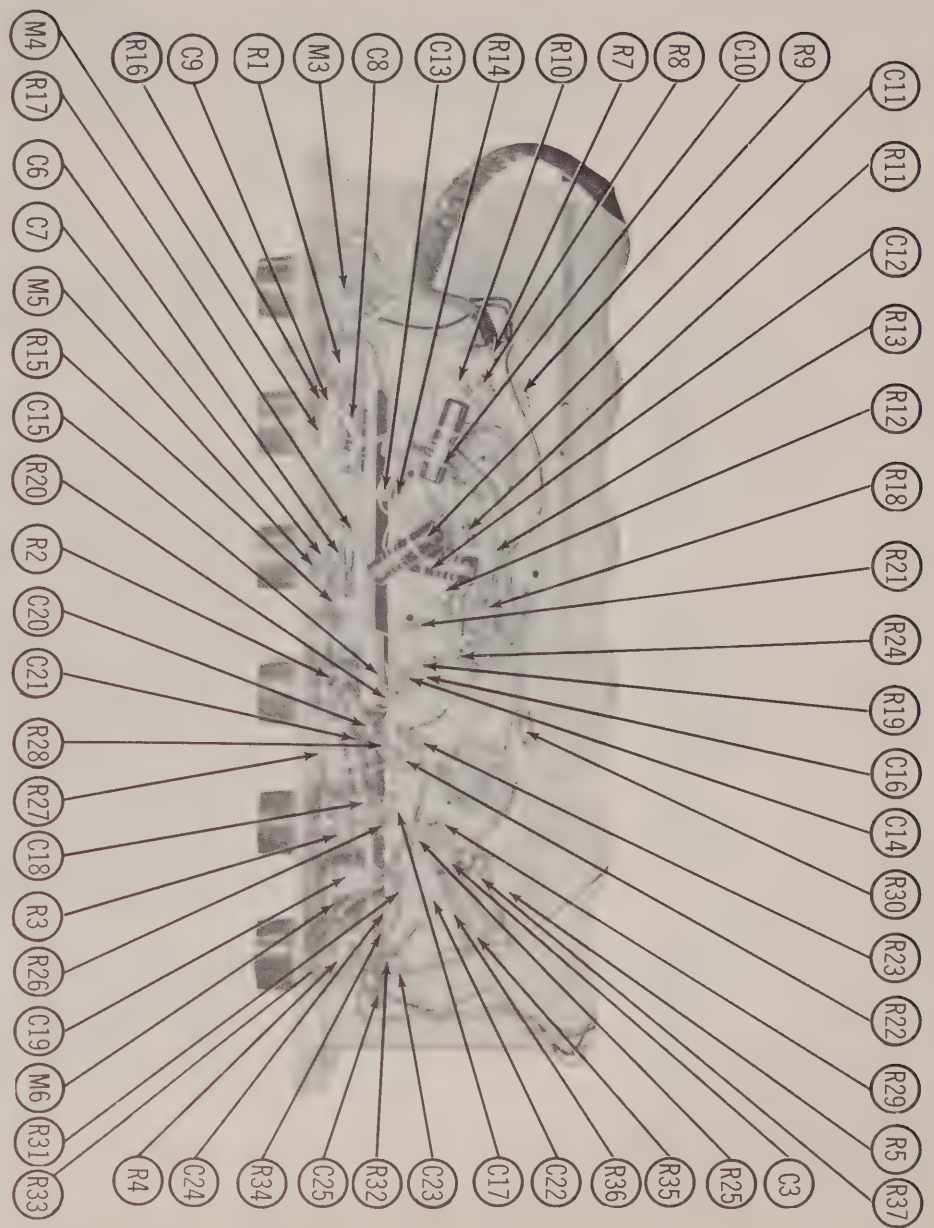
FUSES

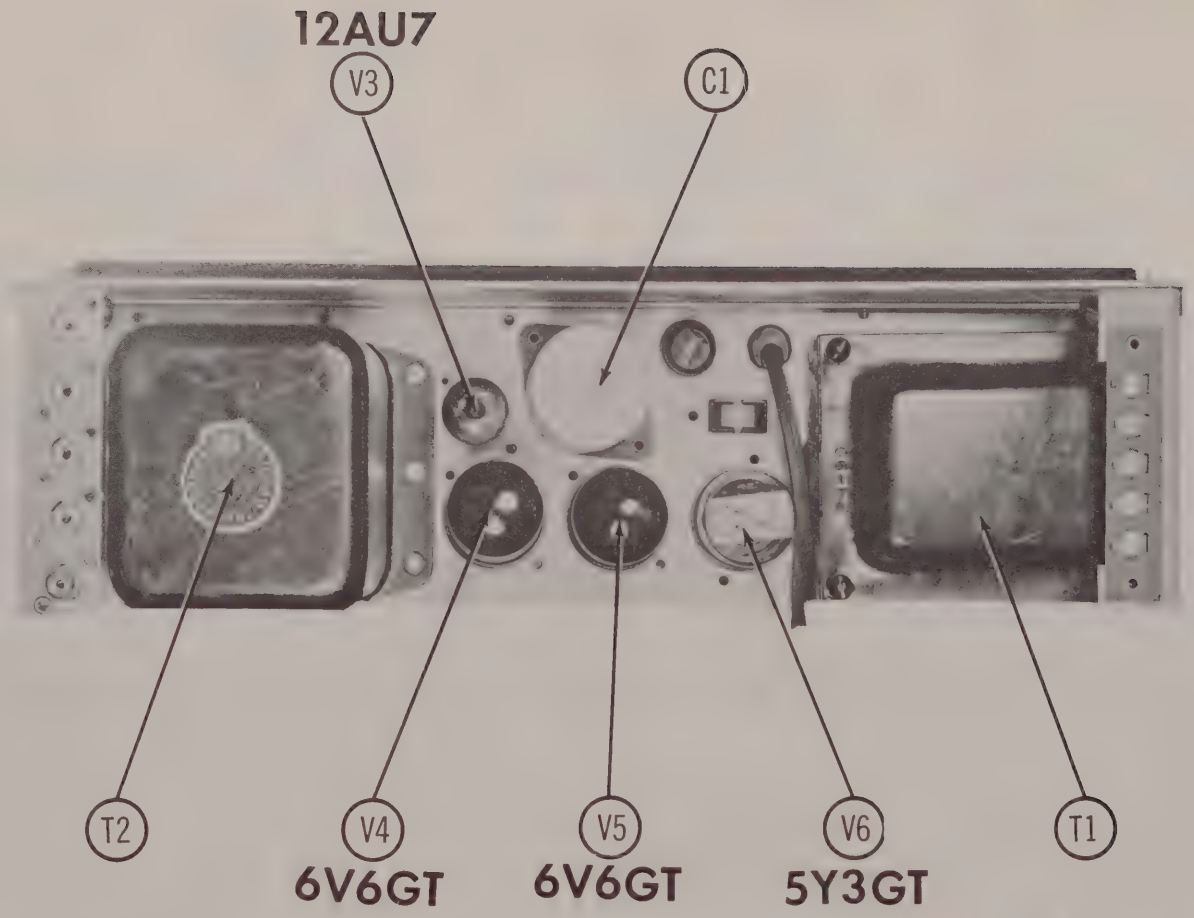
ITEM No.	TYPE	RATING	REPLACEMENT DATA SCOTT PART No. FUSE	SCOTT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	1-1/4A			3131.25 (3AG S/B- 1- 1/4A)	342001	MDL 1-1/4	HKP

MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M2	Dial Light		#47 Bayonet
M3	Switch		Input Selector (wafer)
M4	Switch		Turnover (wafer)
M5	Switch		Roll-off (wafer)
M6	Switch		Power (Toggle)

CHASSIS—BOTTOM VIEW




12AU7
V3
C1
T2
V4
6V6GT
V5
6V6GT
V6
5Y3GT
T1

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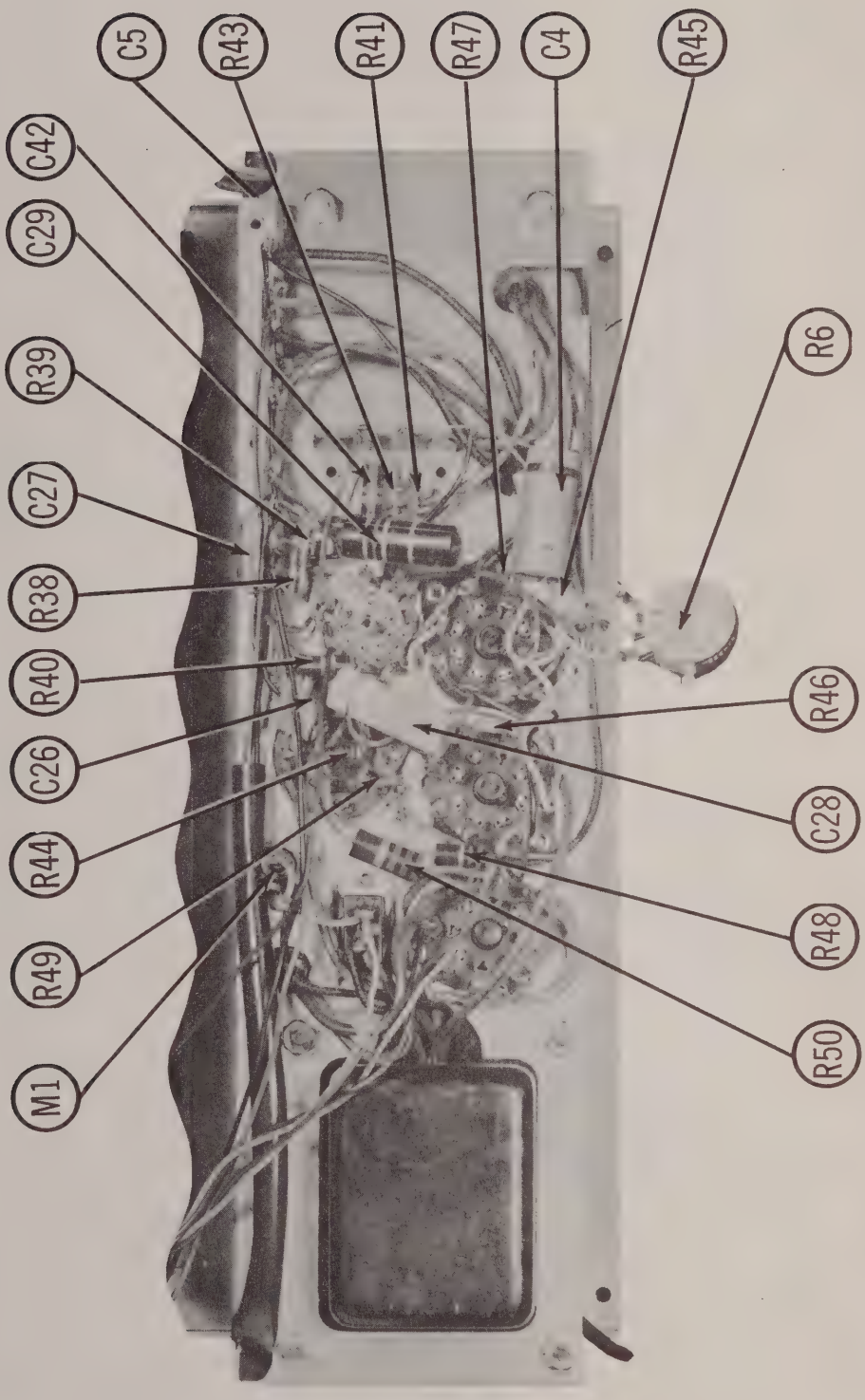

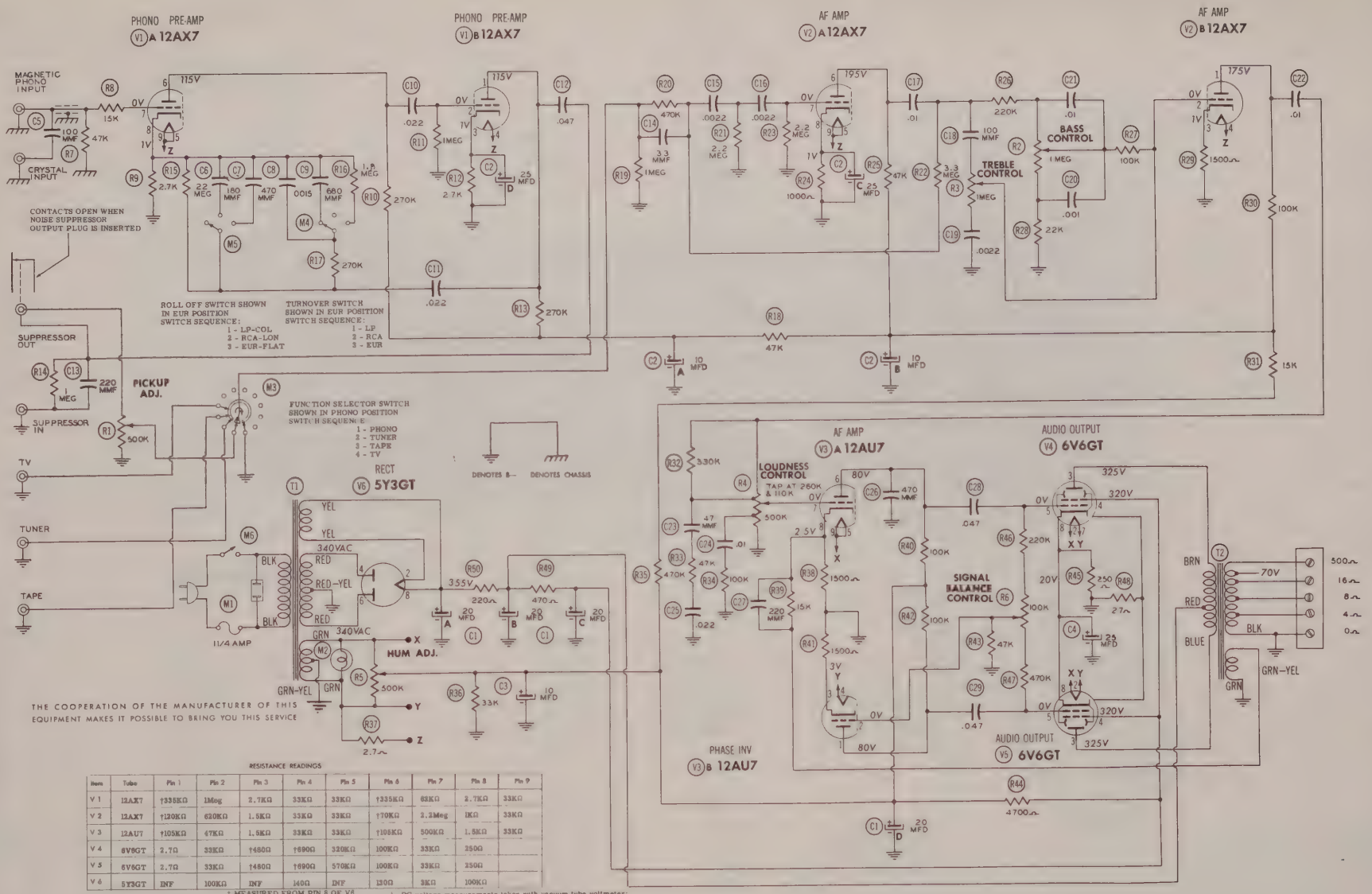
PHONO PRE-AMP V1A 12AX7
PHONO PRE-AMP V1B 12AX7
AF AMP V2A 12AX7
AF AMP V2B 12AX7
MAGNETIC PHONO INPUT
CRYSTAL INPUT
CONTACTS OPEN WHEN NOISE SUPPRESSOR OUTPUT PLUG IS INSERTED
ROLL OFF SWITCH SHOWN IN EUR POSITION SWITCH SEQUENCE: 1 - LP-COL 2 - RCA-LON 3 - EUR-FLAT
TURNOVER SWITCH SHOWN IN EUR POSITION SWITCH SEQUENCE: 1 - LP 2 - RCA 3 - EUR
SUPPRESSOR OUT
SUPPRESSOR IN
PICKUP ADJ.
FUNCTION SELECTOR SWITCH SHOWN IN PHONO POSITION SWITCH SEQUENCE: 1 - PHONO 2 - TUNER 3 - TAPE 4 - TV
DENOTES B+
DENOTES CHASSIS
RECT V6 5Y3GT
TV
TUNER
TAPE
11/4 AMP
HUM ADJ.
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
AF AMP V3A 12AU7
LOUDNESS CONTROL TAP AT 260K & 110K
SIGNAL BALANCE CONTROL
PHASE INV V3B 12AU7
AUDIO OUTPUT V4 6V6GT
AUDIO OUTPUT V5 6V6GT
BASS CONTROL
TREBLE CONTROL
500Ω
16Ω
8Ω
4Ω
0Ω

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†335KΩ	1Meg	2.7KΩ	33KΩ	33KΩ	†335KΩ	63KΩ	2.7KΩ	33KΩ
V 2	12AX7	†120KΩ	620KΩ	1.5KΩ	33KΩ	33KΩ	†70KΩ	2.2Meg	1KΩ	33KΩ
V 3	12AU7	†105KΩ	47KΩ	1.5KΩ	33KΩ	33KΩ	†105KΩ	500KΩ	1.5KΩ	33KΩ
V 4	6V6GT	2.7Ω	33KΩ	†480Ω	†690Ω	320KΩ	100KΩ	33KΩ	250Ω	
V 5	6V6GT	2.7Ω	33KΩ	†480Ω	†690Ω	570KΩ	100KΩ	33KΩ	250Ω	
V 6	5Y3GT	INF	100KΩ	INF	140Ω	INF	130Ω	3KΩ	100KΩ	

† MEASURED FROM PIN 8 OF V6

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

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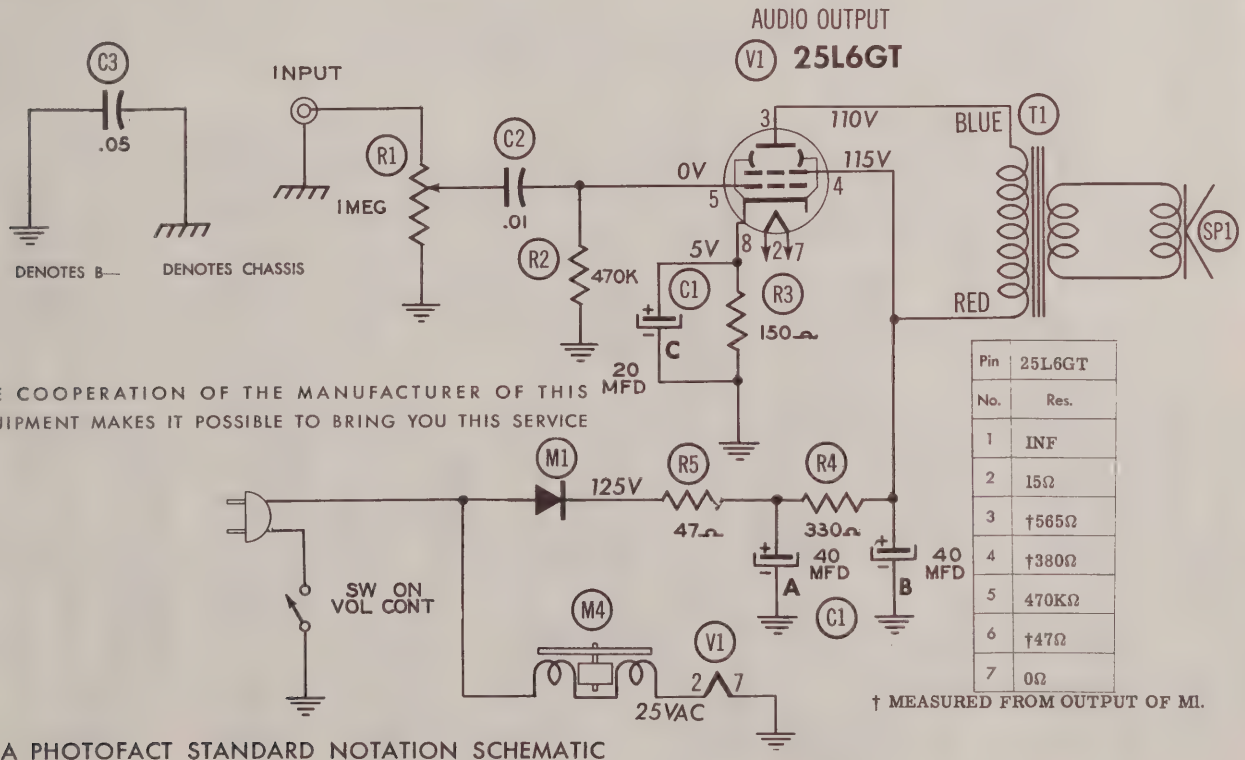
DENVER, [illegible]

TRADE NAME	Steelman Model 1S2
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Phono Amplifier With Single Speed Record Player
TUBES (One)	Type 25L6GT Audio Amplifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .36 Amp. @ 117 Volts AC



Pin No.	25L6GT Res.
1	INF
2	15Ω
3	†565Ω
4	†380Ω
5	470KΩ
6	†47Ω
7	0Ω

† MEASURED FROM OUTPUT OF M1.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Audio Output	25L6GT	25L6GT	7S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PRS150/50-30-20		BBRT44215		3N532	TVA-3448	Red
B	40	150								Blue
C	20	150								Yellow
C2	.01	600		689ZX-01	D6-103	PJ6S1	GP2-333-103	PT611	6TM-S1	
C3	.05	400		489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEELMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	VC-42	Q13-137	A47-1Meg-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	470KΩ	½		BTS-470K	
R3	150Ω	½		BTS-150	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R4	330Ω	1		BTA-330	
R5	47Ω	1			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: STEELMAN PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.5KΩ	3.1Ω	Part of Speaker SP-40	A-3332	A-3025	S-1X ①	Z1101	TS-24S50 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: STEELMAN PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.1Ω	SP-40	ST-113 Mod. P4-X	4A07	

SELENIUM RECTIFIER

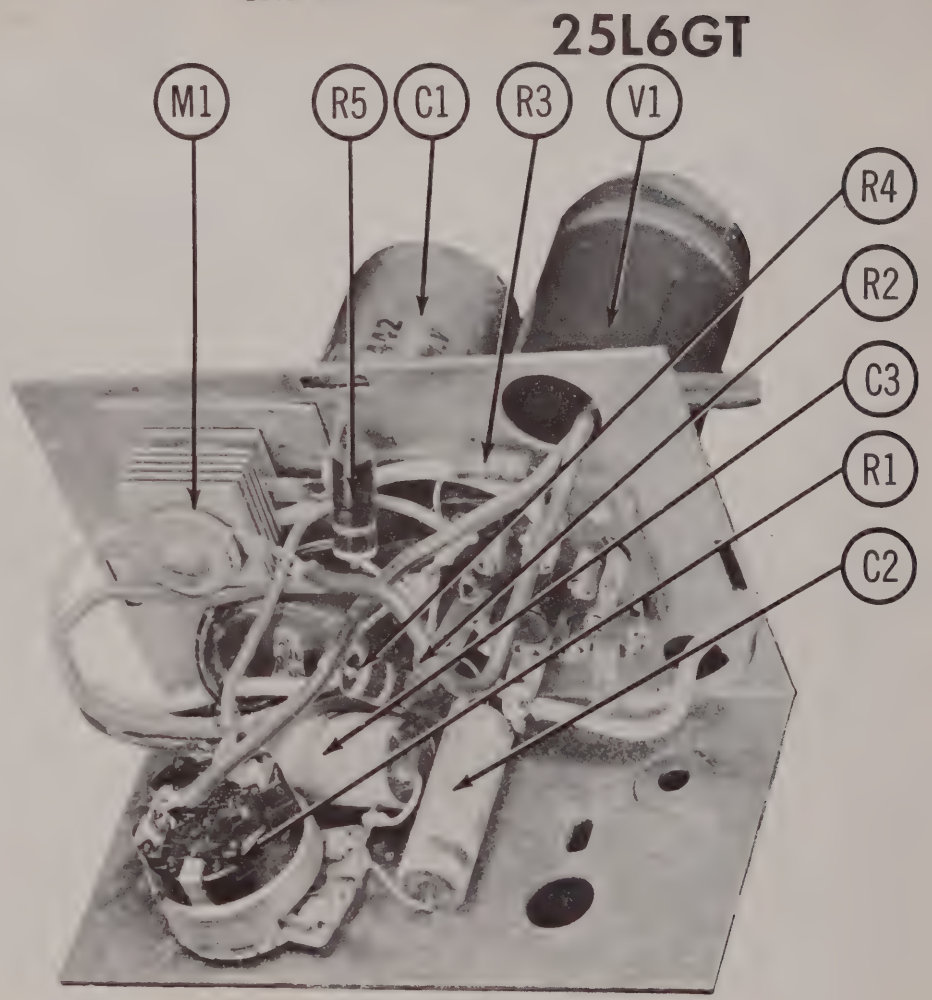
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: STEELMAN PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.054A		1263A	RS65	6S65	65	8J1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M2		16L3 *P-29				H60 *2400		*Complete tone arm and cartridge assy.

CHASSIS—BOTTOM VIEW

25L6GT



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M3		*J-152 or *J-752	*C-370 or *C-427 or *C-325 or †C-312 or ♦C-312D	†WS400	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M4	Motor		Special-series connected with 25L6GT tube filament

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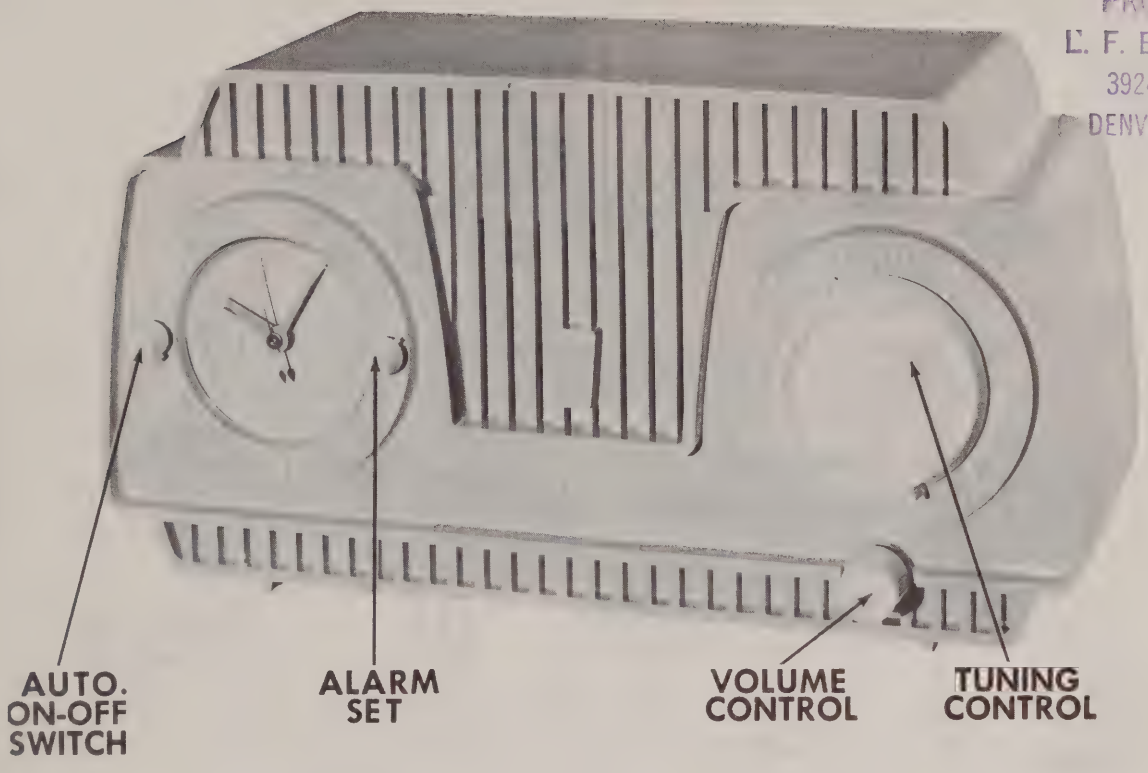
STEWART-WARNER
MODELS 9187-B, -E, -J



STEWART-WARNER
MODELS 9187-B, -E, -J

TRADE NAME	Stewart-Warner Models 9187-B, -E, -J
MANUFACTURER	Stewart-Warner Electric, Div. of Stewart-Warner Corp., 1300 N. Kostner Ave., Chicago 15, Ill.
TYPE SET	AC Operated 2 Band AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC- 60 Cycles
RATING	.27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1650KC
SHORT WAVE	1.8-3MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~ Mod.)	AM	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	High side to external antenna lead. Low side to B-.	1650KC	"	"	"	A5	"
3.	"	"	1500KC	"	Tune to 1500KC signal	"	A6	"
4.	400Ω carbon resistor	High side thru 400Ω to external antenna lead. Low side to B-.	3MC	ASPA	Tune to 3MC signal	"	A7	Adjust for maximum output.
5.	"	"	1.8MC	"	Tune to 1.8MC signal.	"		Check to see if 1.8MC signal can be received. If necessary, repeat steps 2 thru5.

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PARTS LIST AND DESCRIPTIONS

STEWART-WARNER
MODEL 9187-B

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Stewart-Warner PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	520598	PRS150/50-30		BBRD5315		TCD497	TVA-2450	Red
B	30	150								
C2	.02	400	512208	P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C3	.02	400	512208	P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C4	944	500	512548							
C5	47		513002	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C6	5		513401							
C7A	220		♦509836	♦PA-113-1	♦PC-150	♦116TM1	♦1408-01		♦DT-1	
B	2000									
C	5000									
D	250									
E										
C8	.02	400	512208	P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C9	.05	400	512029	489ZX-05	DF-503	CUB4S5		PT415	4TM-S5	
C10	.15	400	512041	P488-15		PJ4P15		PT4015	4TM-P15	

♦ Items C7A, C7B, C7C, C7D, C7E, R6A, R6B and R6C are combined in one unit.
When replacing items individually items C7D and C7E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stewart-Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	1/2	521866	Q13-137	A47-1Meg-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Stewart-Warner PART No.	IRC PART No.	
R2	22KΩ	1/2	510161	BTS-22K	
R3	100KΩ	1/2	510173		
R4	100Ω	1/2	510119	BTS-100	
R5	2.2Meg	1/2	510193	BTS-2.2Meg	

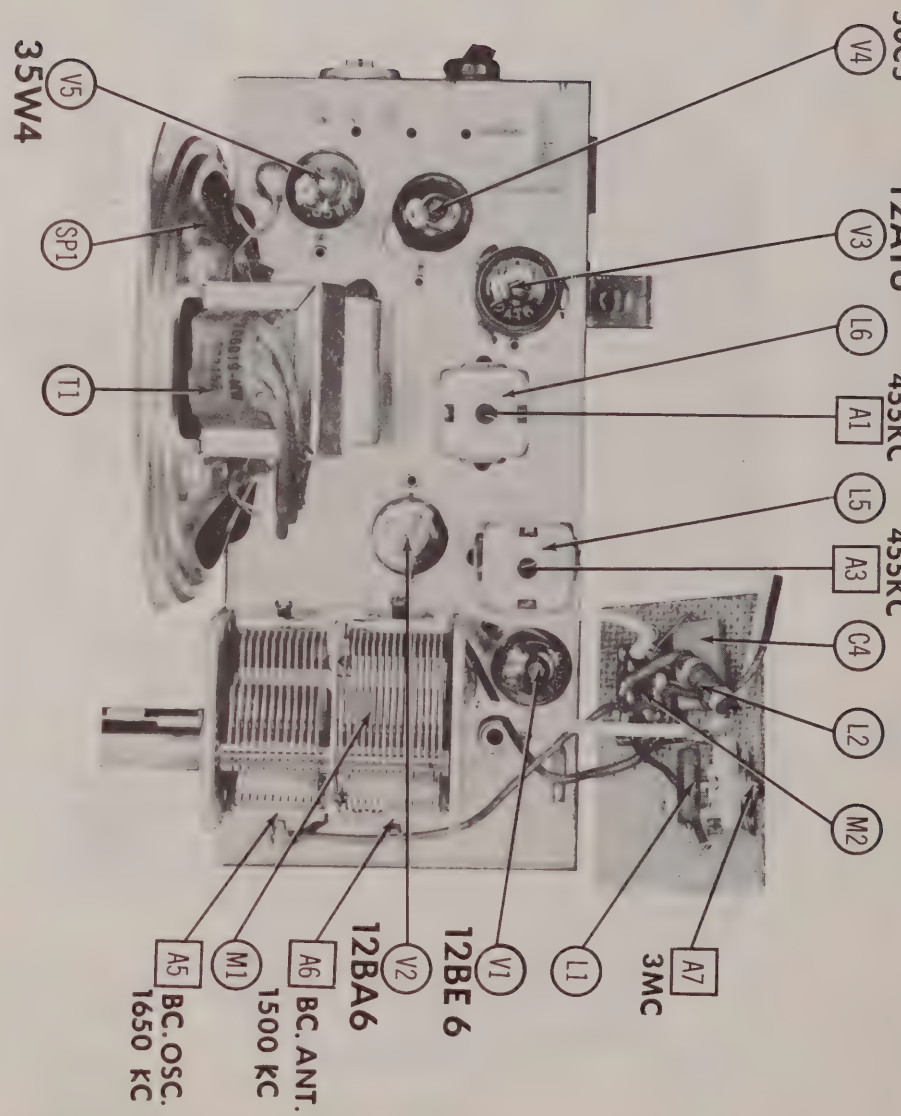
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Stewart-Warner PART No.	IRC PART No.	
R6A	6.8Meg	1/2	♦ 509836	BTS-6.8Meg	
B	470KΩ	1/2		BTS-470K	
C	470KΩ	1/2		BTS-470K	
R7	150Ω	1/2	510122	BTS-150	
R8	1000Ω	1	510237	BTA-1000	

♦ Items R6A, R6B, R6C, C7A, C7B, C7C, C7D, C7E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Stewart-Warner PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.1Ω	522152 522151 ①						① Alternate audio output transformer

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Stewart-Warner PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.1Ω	521633	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

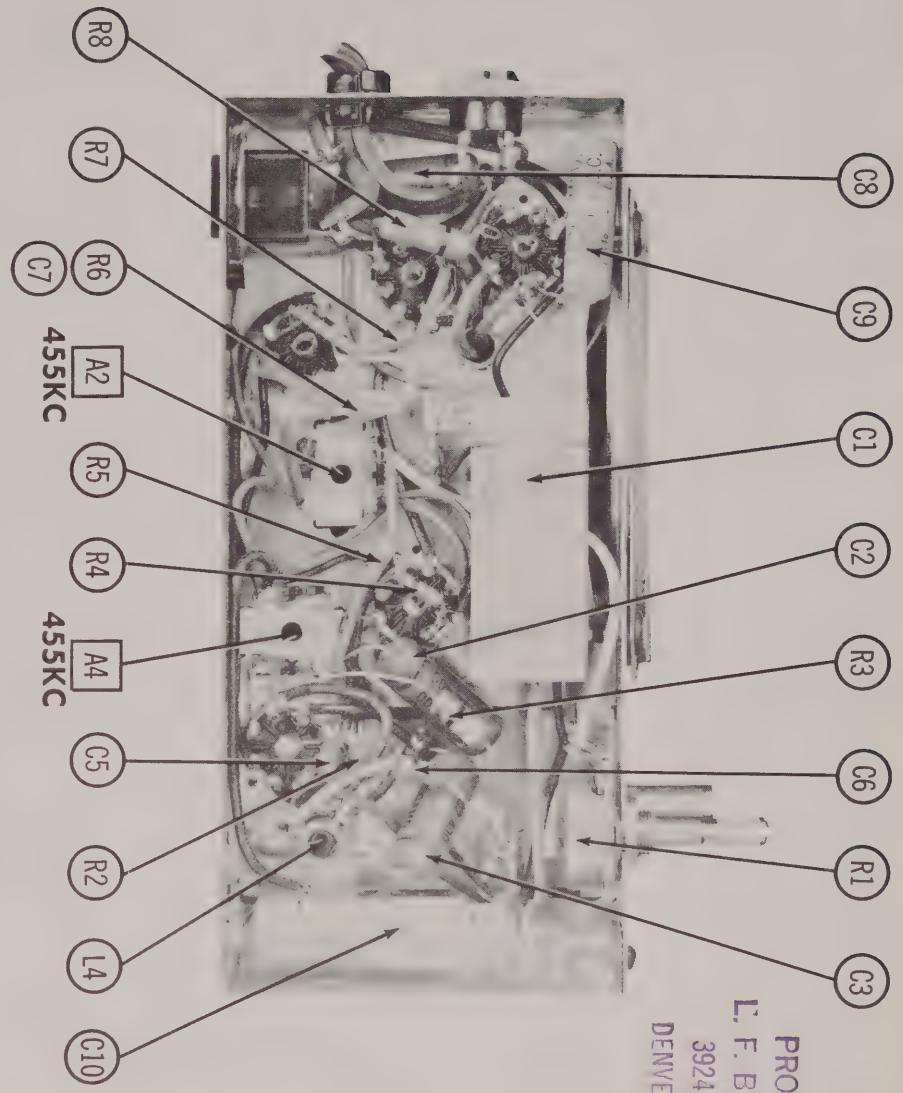
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Stewart-Warner PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Sw.Ant.Coil	1.7Ω		521659	19-6022		4626	Includes cabinet back
L2	Sw.Osc.Coil	2.9Ω		521754	19-3036	TV-180	6176	
L3	Loop Ant.	2.4Ω		521770				
L4	BC Osc.Coil	.8Ω	6.5Ω	521756	14-1074	BC-381	71-Osc.	
L5	Input IF	17Ω	17Ω	509433	16-6758	BC-352	12-C1	
L6	Output IF	17Ω	17Ω	509433	16-6758	BC-353	12-C2	

Note 4. Not used in all models.

MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M1	Tuning Cap.	521628	44-507MMF, 22-170MMF
M2	Switch	521655	Std. BC- Special services
M3	Clock	521918	Ivory-Model 9187-B (includes on/off switch)
	Clock	521955	Black - Model 9187-E (includes on/off switch)
	Clock	521920	Tan - Model 9187-J (includes on/off switch)
A7	Trimmer Cap.	521766	Ant. - Special services
	Cabinet	521858	Green - Model 9187-B
	Cabinet	521928	Chartreuse - Model 9187-E
	Cabinet	521929	Red - Model 9187-J
	Knob	520776	Clock- ivory - Model 9187-B
	Knob	522539	Clock - Black - Model 9187-E
	Knob	522547	Clock - tan - Model 9187-J
	Knob	521925	Tuning - Ivory - Model 9187-B
	Knob	521927	Tuning - Black - Model 9187-E
	Knob	521930	Tuning - Tan - Model 9187-J
	Knob	521922	Volume - Ivory - Model 9187-B
	Knob	521924	Volume - Black - Model 9187-E
	Knob	521698	Volume - Tan - Model 9187-J

CHASSIS—BOTTOM VIEW



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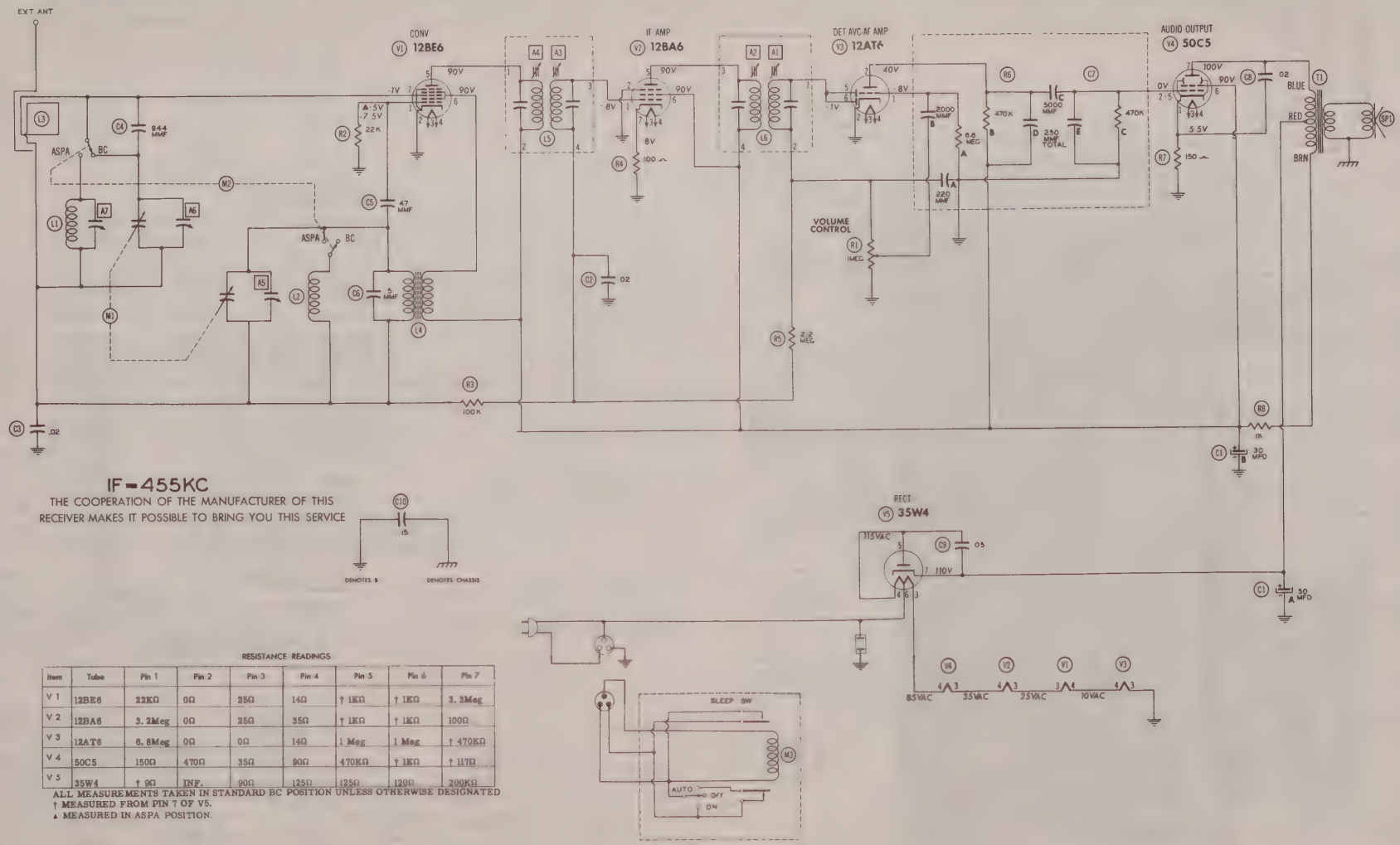

IF-455KC

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	0Ω	25Ω	14Ω	† 1KΩ	† 1KΩ	3. 3Meg
V 2	12BA6	3. 2Meg	0Ω	25Ω	35Ω	† 1KΩ	† 1KΩ	100Ω
V 3	12AT6	6. 8Meg	0Ω	0Ω	14Ω	1 Meg	1 Meg	† 470KΩ
V 4	50C5	150Ω	470Ω	35Ω	90Ω	470KΩ	† 1KΩ	† 117Ω
V 5	35W4	† 9Ω	INF.	90Ω	125Ω	125Ω	120Ω	200KΩ

ALL MEASUREMENTS TAKEN IN STANDARD BC POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 7 OF V5.
▲ MEASURED IN ASPA POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured voltages are from cathode (pin 8) to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal circuit-component values (marked ▲ possible variations) - 15% on voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MODEL K-74

TELE-KING
MODEL K-74 (Ch. TVJ-Revised)

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TELE-KING
MODEL K-74 (Ch. TVJ-Revised)

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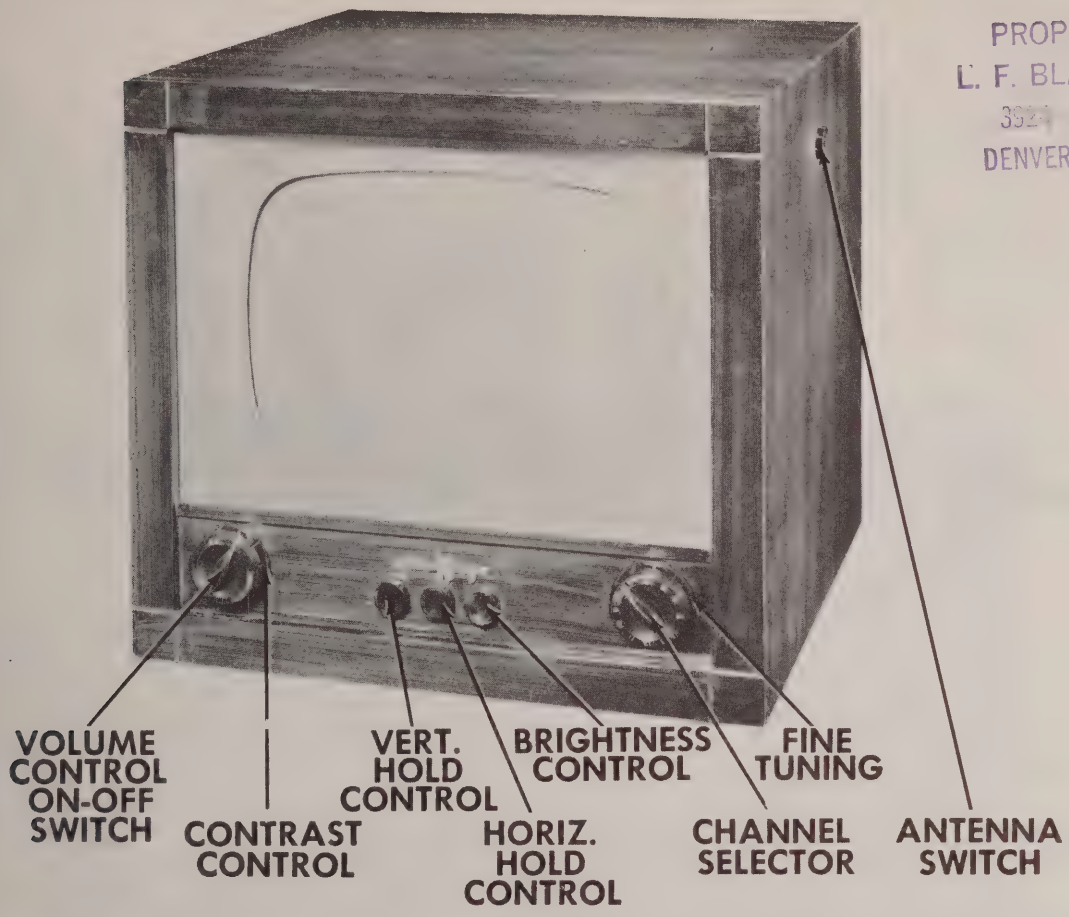

TRADE NAME	Tele-King Model K-74 (Ch. TVJ Revised)
MANUFACTURER	Tele-King Corp., 601 West 26th St., New York 1, N. Y.
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.52 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 25.1MC, Sound IF 20.6MC (Intercarrier)

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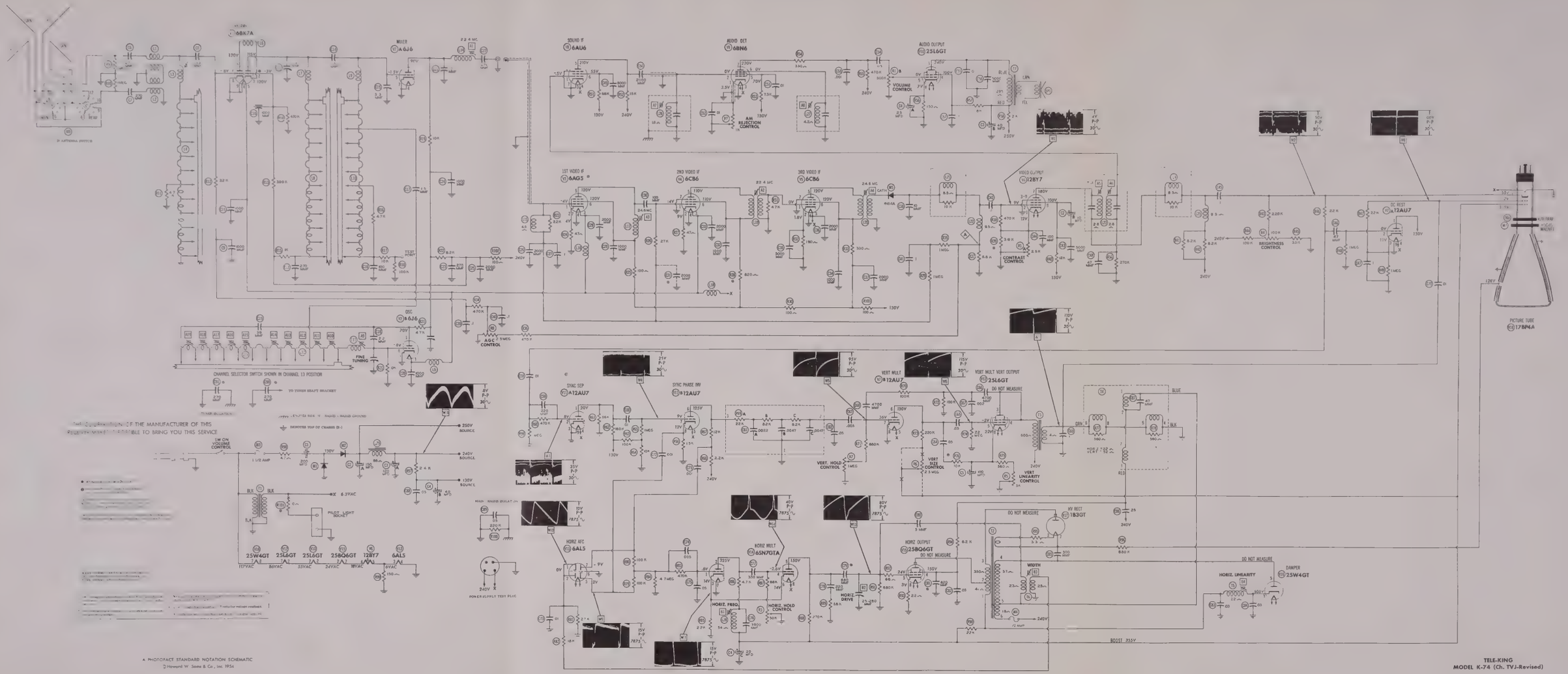
TELE-KING
MODEL K-74 (Ch. TVJ-Revised)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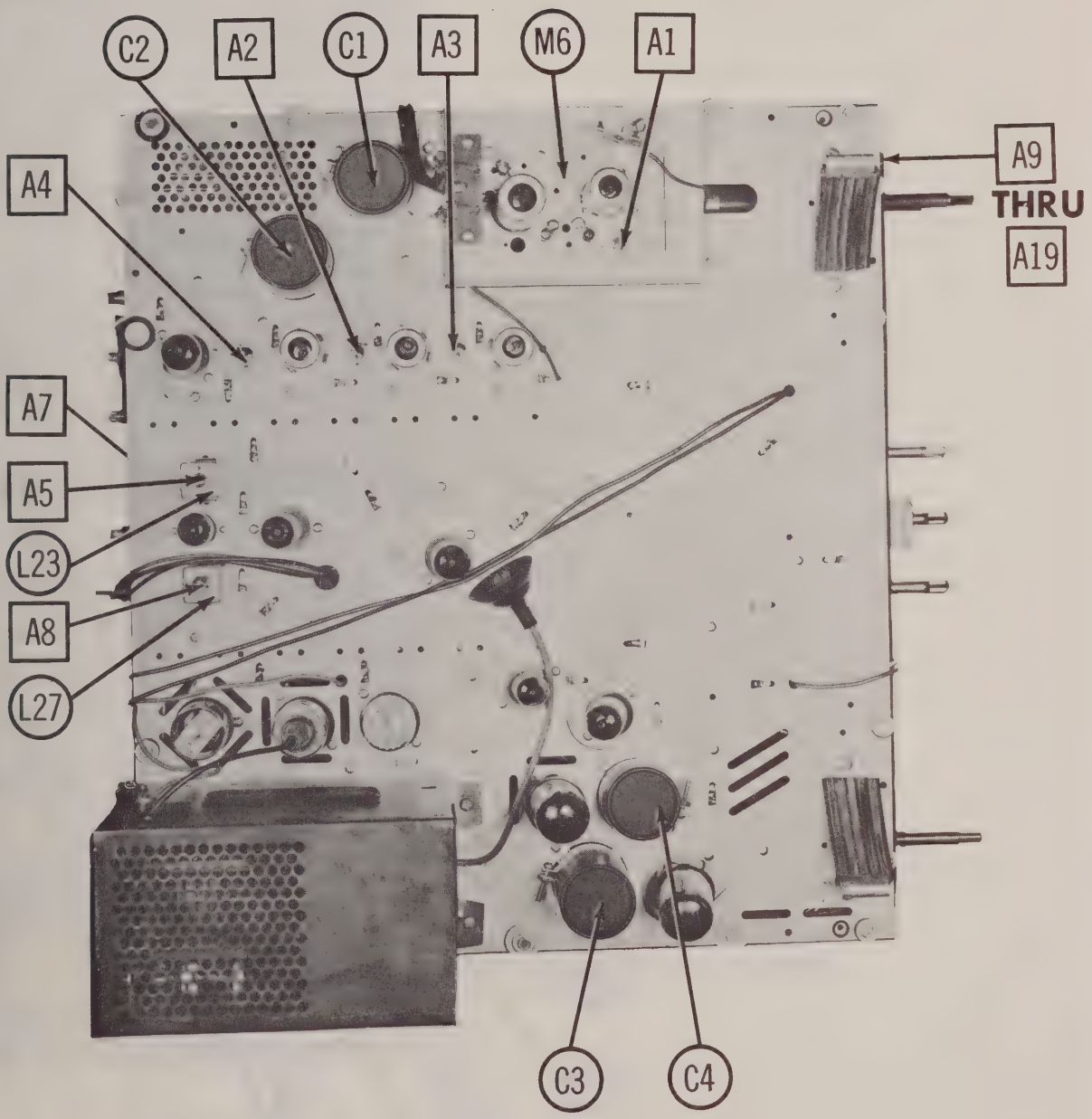

CHASSIS TOP VIEW

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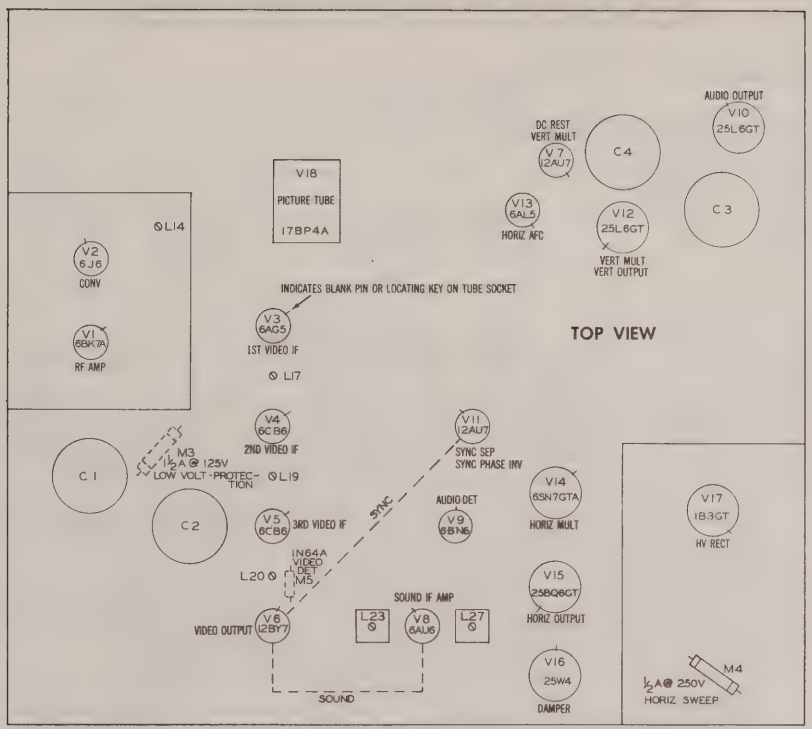
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TELE-KING
MODEL K-74 (Ch. TVJ-Revised)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

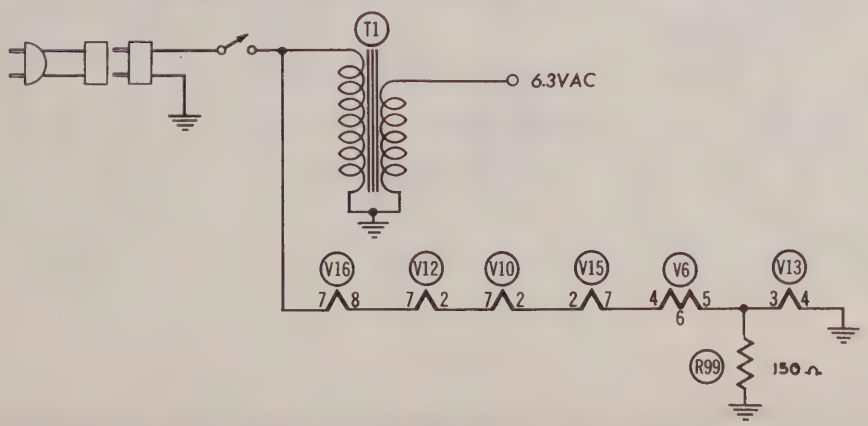
POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifier (M1 & M2), Fuse (M3)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V18
Has pic, no sound - V8, V9, V10

SYNC FAILURE
No vert. sync - V7, V11, V12
No horiz. sync - V11, V13, V14
No vert. or horiz. sync - V11

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V18, Fuse (M4)
No vertical deflection - V7, V12
Poor vert. linearity or foldover - V7, V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, M1, M2
Vert. off freq. - V7, V11, V12
Horiz. off freq. - V11, V13, V14

SINCE THIS RECEIVER EMPLOYS TUBES USED IN A SERIES-PARALLEL FILAMENT NETWORK, AN OPEN FILAMENT IN ANY TUBE IN SERIES MAY CAUSE THE SET TO BE INOPERATIVE. (SEE CIRCUIT BELOW.)



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V14) from it socket to disable the high voltage.
Use an isolation transformer to protect the test equipment.
Make all test equipment ground returns to B- (chassis top plate).

VIDEO IF ALIGNMENT

Set contrast control for minimum contrast. Remove the converter tube (V2) and replace with a 6J6 which has Pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to B-.	22.4MC (Unmod)	Any	DC probe to point Ⓐ. Common to B-.	A1, A2	Adjust for maximum deflection.
2.	"	"	24.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to B-.	24MC (10MC Swp)	20.6MC 22.0MC 25.1MC 26.6MC	Any	Vert. Amp. thru 10KΩ to point Ⓐ Low side to B-.		Check for response curve similar to Fig.1. If necessary, retouch A1 thru A4 to obtain desired response.

SOUND IF ALIGNMENT USING ON THE AIR SIGNAL

Remove the dummy converter tube and replace the original 6J6 in its socket.
Tune in a TV station and connect an attenuator pad (Fig. 2) in series with the antenna.
Attenuate the input until the sound signal drops below the limiting level of the 6BN6 as indicated by a hiss similar to superregeneration.
It may be necessary to use more than one pad similar to Fig. 2 to reduce the signal input below the limiting level of the 6BN6.
Adjust the sound take off coil (A5 and A6) for maximum audio. Adjust A7 for maximum audio signal regardless of hiss or buzz. If the hiss disappears during adjustment of A5 or A6 reduce the signal input until the hiss returns. When maximum sound output hase been reached through adjustment of A5, A6 and A7 increase the signal output to the point where the hiss disappears and adjust A8 for maximum sound output.
Adjust the AM rejection control (R7A) for minimum intercarrier buzz, then repeat the adjustment of A8 and R7A.

OSCILLATOR ALIGNMENT

There is no individual oscillator adjustment for channel 7 as the alignment for channel 8 assures proper alignment for channel 7.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to B-.	A9	Adjust to place video marker at 50% on response curve as in Fig. 3.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A15	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A16	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A17	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A18	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A19	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

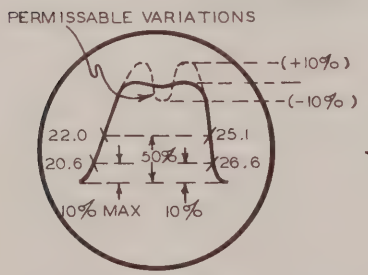


FIG. 1

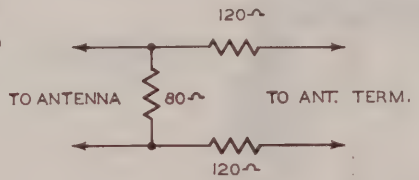


FIG. 2

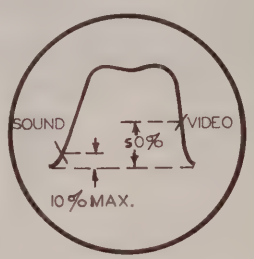
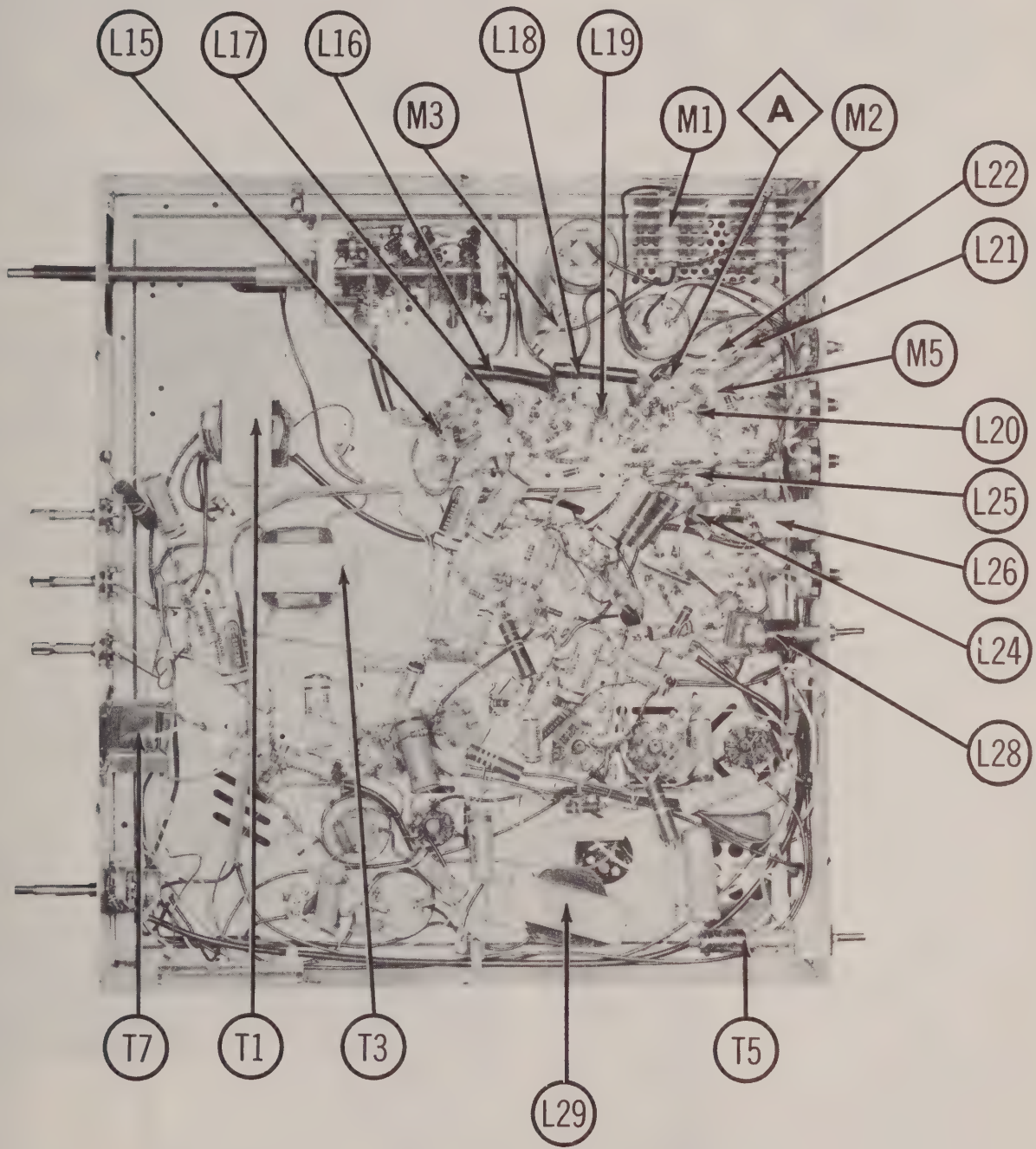


FIG. 3

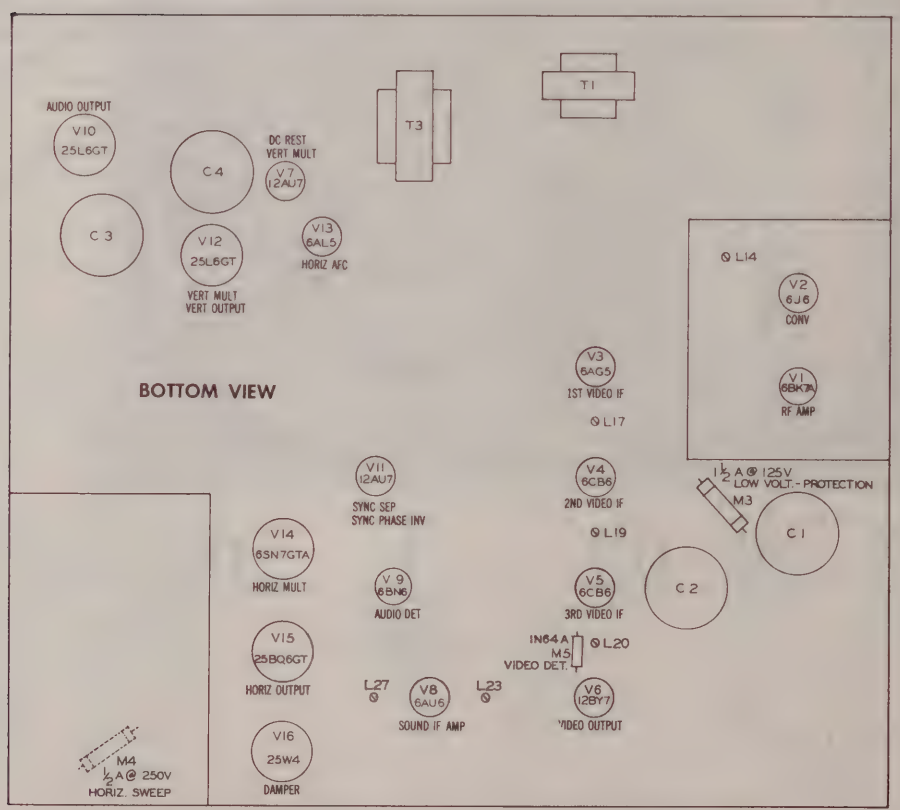


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

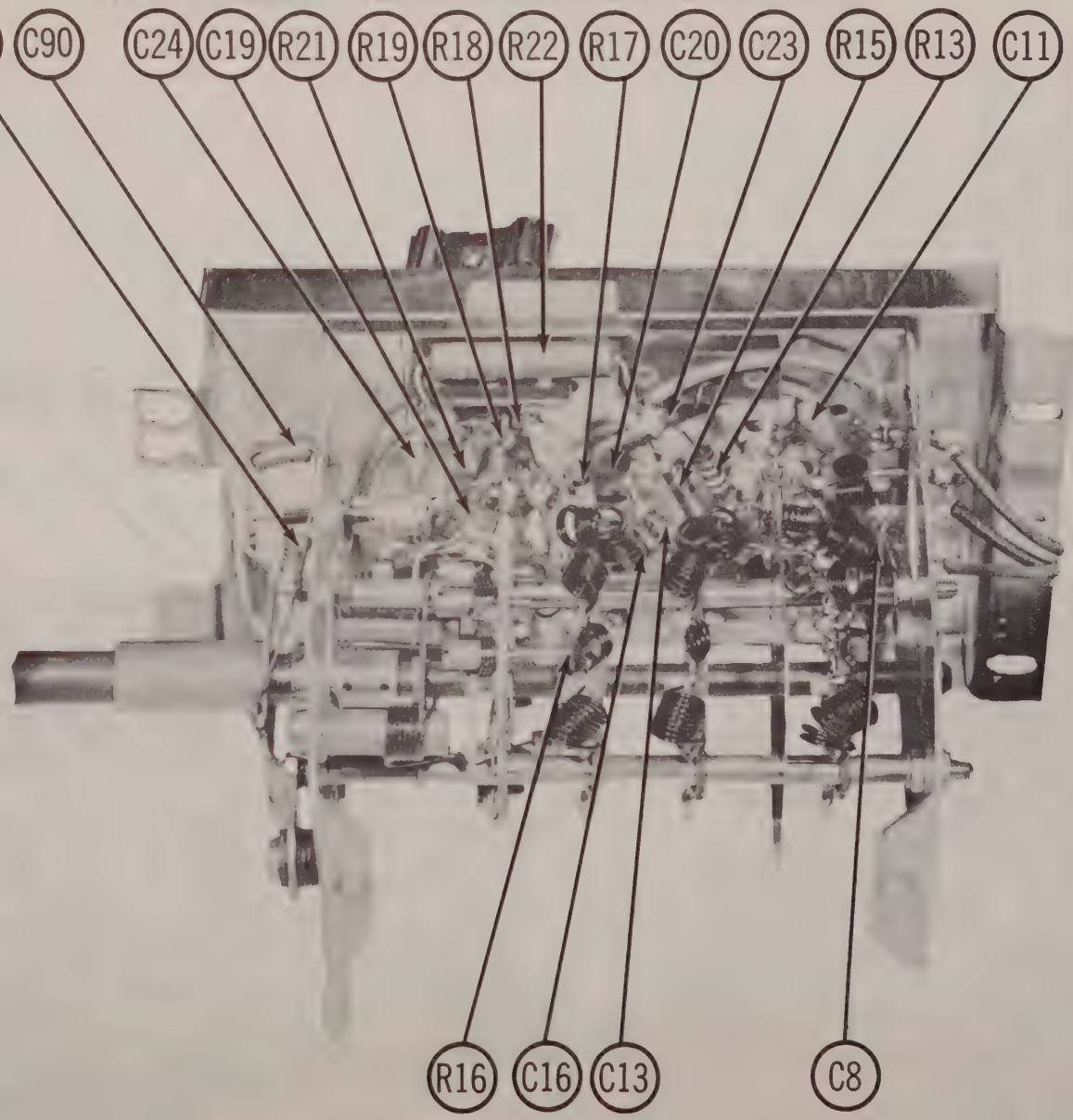
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	†1.2KΩ	200KΩ	INF	0Ω	.1Ω	INF	2Meg	0Ω	0Ω
V 2	6J6	†13.2KΩ	†18.4KΩ	.1Ω	0Ω	110KΩ	10KΩ	0Ω		
V 3	6AG5	2Meg	47Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	47Ω		
V 4	6CB6	2Meg	47Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 5	6CB6	.2Ω	180Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 6	12BY7	800Ω	470KΩ	0Ω	16.5Ω	5Ω	10.5Ω	†4.2KΩ	†14.5KΩ	0Ω
V 7	12AU7	†2.4KΩ	1Meg	1Meg	.1Ω	.1Ω	▲1.4Meg	1.2Meg	0Ω	0Ω
V 8	6AU6	270KΩ	0Ω	0Ω	.1Ω	†15KΩ	†70.5KΩ	0Ω		
V 9	6BN6	500Ω	1.6Ω	.1Ω	0Ω	†10KΩ	4.2Ω	†470KΩ		
V 10	25L6GT	INF	28Ω	†2.3KΩ	†20KΩ	250KΩ	INF	30Ω	150Ω	
V 11	12AU7	†50KΩ	1.5Meg	0Ω	.1Ω	.1Ω	†14.2KΩ	†1.1Meg	1.5KΩ	0Ω
V 12	25L6GT	INF	30Ω	†666Ω	†666Ω	2.2Meg	▲1.2Meg	19.5Ω	800Ω	
V 13	6AL5	1KΩ	1KΩ	5.5Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5.2Meg	▲25KΩ	2.2KΩ	80KΩ	▲300KΩ	2.2KΩ	0Ω	.1Ω	
V 15	25BQ6GT	0Ω	28Ω	INF	†6.2KΩ	680KΩ	5.6KΩ	16.5Ω	22Ω	TOP CAP ▲63Ω
V 16	25W4	INF	INF	1Meg	INF	†90Ω	1Meg	.4Ω	19.5Ω	
V 17	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲413Ω
V 18	17BP4A	0Ω	1Meg	PIN 10 ▲22KΩ	PIN 11 †180KΩ	PIN 12 .1Ω				

† MEASURED FROM OUTPUT OF M2
▲ MEASURED FROM PIN 3 OF V16



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE

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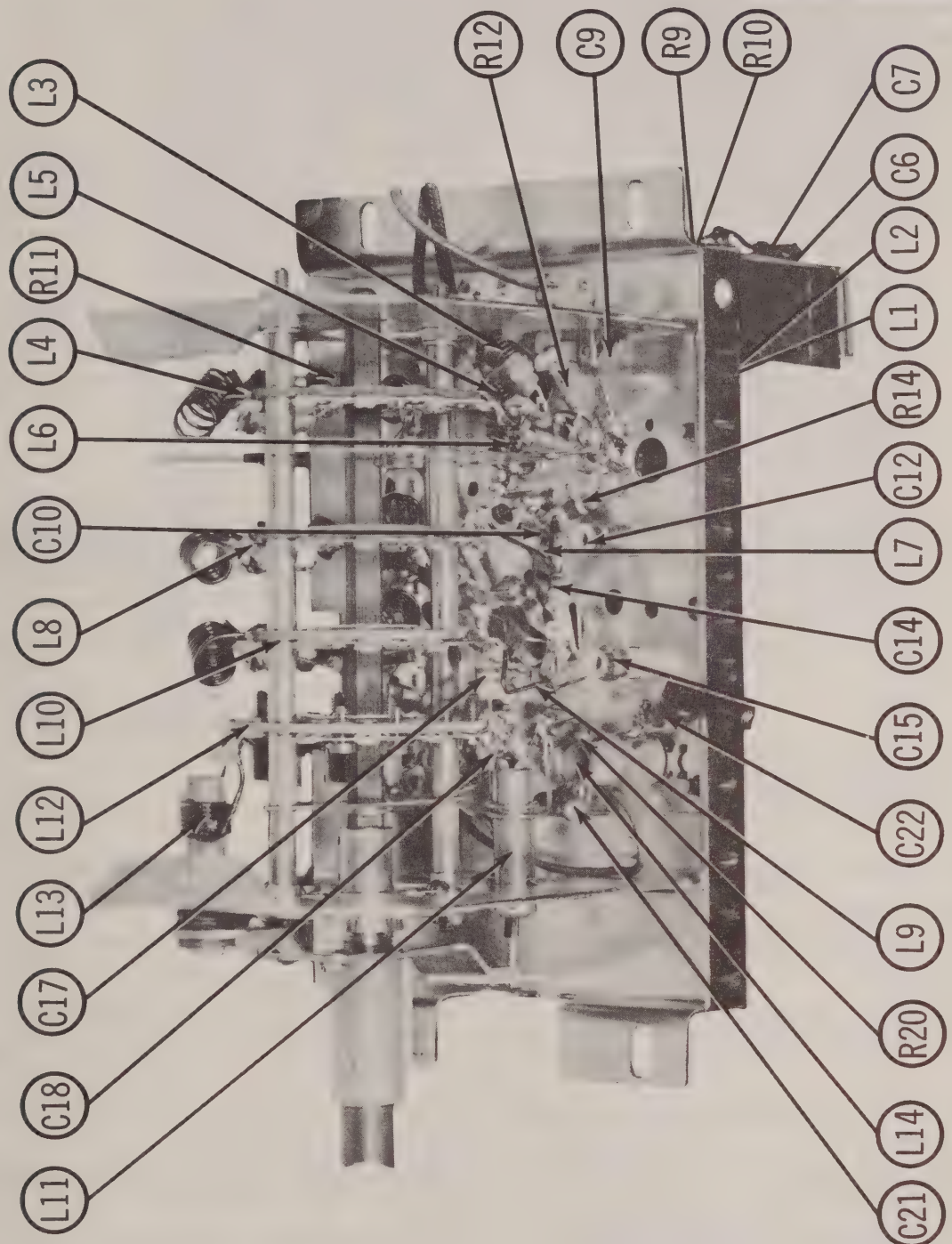
DENVER, COLORADO



RF TUNER-LEFT SIDE

TELE-KING
MODEL K-74 (Ch. TVJ-Revised)

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check adjustments B2, B3 and B4. Check by substitution V15 and V16. Check M1, M2, R94 and other associated components.

DRIVE LINES

Check adjustments B2 and B4. Check by substitution V15 and V16. Check C79, R91, R94, R93, T2, T4A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V15 and V16. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V14, V15 and V16. Check C75 for open. Check other components associated with V14.

XMAS TREE EFFECT

Check by substitution V14, V15 and V16. Check T2 and T4A for internal arcing. Check C77, C76, C79, R87, R86 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V7 and V12. Check waveform W6.

If Satisfactory	If Unsatisfactory
Check T3, T4B, C69, C5 and other associated components.	Check C65, R73, R6 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V7 and V12. Check vertical size and vertical linearity controls for proper operation. Check T3, T4B and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V7 and V12. Check R6, R73, C64, C65 and other associated components.

COMPRESSED AT TOP

Check by substitution V7 and V12. Check C5, R76, R75, R5 and other components associated with V12.

FOLDS

Check by substitution V7 and V12. Check C64, R76, R75, R5 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V11. Check C58, C60, R68, R67, R62, R61 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V11 and V7. Check R2, C63, Check vertical integrator network. Check video IF alignment for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V13 and V14. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check L28, C76, C77, R87, R3 and other associated components.	Check horizontal AFC network for component failure or change of value.

HORIZONTAL BENDING

Check by substitution V11, V13 and V14. Check components associated with V13.

VIDEO

LOSS OF VIDEO

Substitute V6. Check L25, C43, C45, R40, picture tube and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A5. Check video IF alignment.

POOR CONTRAST"

Substitute V6. Check video crystal detector network. Check contrast control, picture tube and other associated components.

NEGATIVE PICTURE

Substitute V6. Check video crystal detector network. Check picture tube. Check video IF alignment.

SMEAR

Substitute V6. Check L21, L22, L24, L25. Check video IF alignment and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substituion V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9 and V10. Check stage V10 using audio signal generator. Apply audio across R1B.

If Satisfactory	If Unsatisfactory
Check audio detector and audio IF stages for component failure or change of value.	Check C54, C55, C56, R57, R58, R56, C57, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments R7 and A8 for minimum buzz. If still unsatisfactory, check audio IF alignment

DISTORTED

Follow procedure outlined under "Weak or No Sound".

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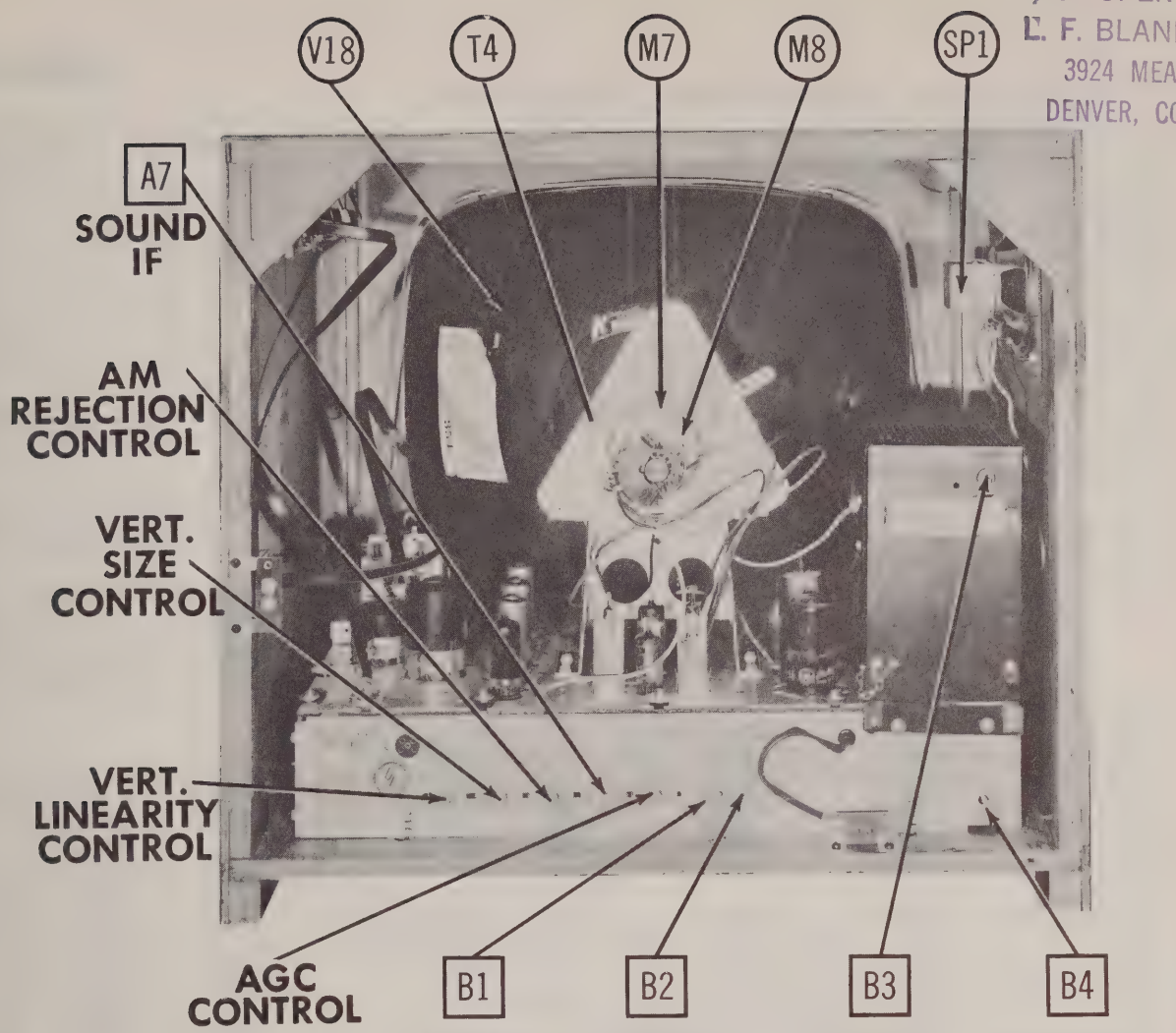

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to its mid-range position.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) for the best compromise between brightness and horizontal linearity.

Adjust the width slug B3 for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug B4 for a picture that is symmetrical from left to right.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TELE-KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BK7A	6BK7A	9AJ	
V2	Converter	6J8	6J8	7BF	
V3	1st. Video IF Amp.	6AG5	6AG5	7BD	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	DC Restorer-Vert. Mult.	12AU7	12AU7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Audio Detector	6BN6	6BN6	7DF	
V10	Audio Output	25L6GT	25L6GT	7B	
V11	Sync Separator-Sync Phase Inv.	12AU7	12AU7	9A	
V12	Vert. Mult.-Vert. Output	25L6GT	25L6GT	7B	
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V15	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V16	Damper	25W4	25W4	4CQ	
V17	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: TELE-KING PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V18	17BP4A	17BP4A	17BP4A 17BP4B①	17BP4A 17BP4B① 17BP4 ②	17BP4A	12N 12N 12D	① Aluminized ② Circuit changes necessary.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	200	150	CEM-9-E	AFHI-71		XB006		FP118	TVL-3431	
C2A	▲150	300	CEM-31	AFHSL-73		B027		FP218	TVL-3581	
B	▲10	300		PRS350/10		BR1035		TC77		
C3A	▲120	300	CEM-11	AFHI-73		B070		FP218	TVL-3585	
B	▲40	300		PRS450/40				TC65		
C4A	▲35	25	CEM-13	AFH3-132		C106		FP367.5	TVL-4732	
B	▲40	300								
C	▲20	450								
C5	100	25	CET-5	PR325/100		BR H251		TC2501	TVA-1207	
C6	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C7	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C8	39			SI39	D6-390	TP28	GP2K-390	UC-5439	5GA-G39	
C9	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C10	1000			EF-001	MFT-1000				503C-D1	
C11	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C12	1-6				829-6		3139-01-10			
C13	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C14	1.5			SIL.5NP0	TCZ-1.5	TZ04	NP0K-1R5	ZT-5515	5TCCB-V15	
C15	.5-3				829-3		3115-01-GR5	CT565A		
C16	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C17	1.5			SIL.5NP0	TCZ-1.5	TZ04	NP0K-1R5	ZT-5515	5TCCB-V15	
C18	2.2									
C19	39									
C20	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C21	10			SIDNP0	TCZ-10	TZ09	NP0K-100	ZT-541	5TCC-Q1	
C22	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C23	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C24	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C25	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C26	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C27	.1	400	CP-2-01	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C28	1000		CC-21	SI1000	D6-102	TP52	GP3L-102	UC-521	5HK-D1	
C29	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C30	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C31	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	Note 1
C32	1000		CC-21	SI1000	D6-102	TP52	GP3L-102	UC-521	5HK-D1	
C33	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C34	1000		CC-21	SI1000	D6-102	TP52	GP3L-102	UC-521	5HK-D1	
C35	5000		CC-25	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C36	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C37	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C38	10		CC-41	SI10	D6-100	TP09	GP1K-100	UC-541	5GA-Q1	
C39	.1	400	CP-4-01	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C40	.1	400	CP-4-01	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C41	.1	400	CP-2-01	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C42	.1	200	CP-2-01	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C43	5000		CC-25	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C44	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C45	.1	600	CP-4-01	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C46	47		CC-447	SI47	D6-470	TP28	GP1K-470	UC-5447	5GA-Q47	
C47	.1	400	CP-2-01	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C48	47		CC-447	SI47	D6-470	TP28	GP1K-470	UC-5447	5GA-Q47	
C49	5000		CC-25	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C50	2000		CC-22	BPD-002	DD-202	K072	811-002	DC-522	5HK-D2	
C51	.01	600	CP-6-12	P688-01	D6-103	CUB6B1	GP2-333-103	PT611	6TM-S1	
C52	.01	600	CP-6-11	P688-01	D6-103	CUB6B1	GP2-333-103	PT611	6TM-S1	
C53	.001	600	CP-6-21	P688-001	DD-102	CUB6U1	GP2L-102	PT621	6TM-D1	
C54	.05	600	CP-6-15	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C55	.01	1000	CP-10-11	P1088-01		CUB15B1		PT15B1	MB-S1	
C56	5000		CC-25	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C57	.1	600	CP-6-01	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C58	.01	600	CP-6-11	P688-01	D6-103	CUB6B1	GP2-333-103	PT611	6TM-S1	
C59	220	500	CM-322	1469-00025		22BY722		MCB240		
C60	.01	600	CP-6-11	P688-01	D6-103	CUB6B1	GP2-333-103	PT611	6TM-S1	
C61A	.0022							PT622		
B	.0047		●CRP-3	●PA-110	●PC-100	●115TM1	●1406-01	PT635	●V-1	
C	.0047							PT625		

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C62	.05	600	CP-6-15	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C63	.005	600	CP-6-25	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C64	.05	600	CP-6-15-9	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C65	.05	600	CP-6-15	P688-06	DF-503	CUB6S5		PT615	6TM-S5	
C66	4700	1000	CM-247A-1							
C67	.002	600	CP-6-23	P688-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C68	4700	1000	CM-174A-1							
C69	.1	600	CP-6-01-3	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C70	.01	600	CP-6-11	P688-01	D6-103	CUB6B1	GP2-333-103	PT611	6TM-S1	
C71	.001	600	CP-6-21	P688-001	D6-102	CUB6U1	GP2L-102	PT621	6TM-D1	
C72	.001	600	CP-6-21	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C73	.01	600	CP-6-11	P688-01	D6-103	CUB6B1	GP2-333-103	PT611	6TM-S1	
C74	.005	600	CP-6-25	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C75	.05	600	CP-6-15	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C76	3900	500	CM-239	1464-004		1R5D39		MCB463	MB-24	
C77	330	500	CM-333A	1469-00035		5R5T33				
C78	220	500	CM-322	1469-00025		22R5T22		MCB240		
C79	680	500	CC-368	1479-0007		5R5T68			MS-37	Note 2
C80	5	5000	CHV-55-5K	HVD60-00000-47	DD60-4R7				50GA-V47	
C81	820	500	CM-382			5R5T82				Note 3
C82	.05	600	CP-6-15	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C83	.03	1000	CO-10-13	P1088-03		CUB15B3		PT1513	MB-S1	
C84	.03	1000	CO-10-13	P1088-03		CUB15B3		PT1513	MB-S1	
C85	500	20000	CHV-35-20A	HV20C	TV3-502	MMU20T5	413	HV20035A	20DK-T5	
C86	.25	400	CP-4-025	P488-25		CUB4P25		PT4025	4TM-P25	
C87	47	4000								
C88	.05	600	CP-4-15	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C89	.05	600	CP-6-15	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C90	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	Note 1
C91	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	Note 1

Note 1. Not used in all Models.
Note 2. Some models use 820MMF in this application.
Note 3. Some models use 270MMF in this application.
● Items C61A, C61B, C61C, R69A, R69B, R69C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-KING PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2500Ω	½	PD-10A	* QJ-332	RTV-330	F1-17	UF252-T23	Contrast (Tapped ⑥ 1500Ω Not used) Panel
B	500KΩ	½				R2-41	UR55A	Volume-Rear
C	Switch					KB-1	US-26	Attach to R1B
R2A	1 Meg	½	P-17B	Q11-137	A47-1Meg-S	AB-59	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	50KΩ	½	P-18B	Q11-123	A47-50K-S	AB-51	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	100KΩ	½	P-19B	Q11-128	A47-100K-S	BA-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-4	Not Req.	Attach to R4A
R5A	5000Ω	½	P-2D	Q11-114	A47-5000-S	BX-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A
R6A	2.5Meg	½	P-3D	Q11-239	A47-2.5Meg-S	BX-83	SU-565	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R6A
R7A	1000Ω	½	P-12D	Q11-105	A47-1000-S	AB-5	U-4	AM Rejection
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	2.5Meg	½	P-5D	Q11-239	A47-2.5Meg-S	bX-83	SU-565	AGC
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R8A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B17-110X & P2-118 (Panel) B13-133 & RI-202 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TELE-KING PART No.	IRC PART No.	NOTES
R9	1 Meg	½		BTS-1 Meg	
R10	1 Meg	½		BTS-1 Meg	
R11	4700Ω	½		BTS-470Ω	
R12	22KΩ	½		BTS-22K	
R13	390KΩ	½		BTS-390K	
R14	470KΩ	½		BTS-470K	
R15	1000Ω	½		BTS-1000	
R16	4700Ω	½		BTS-4700	
R17	10KΩ	½		BTS-10K	
R18	100KΩ	½		BTS-100K	
R19	10KΩ	½		BTS-10K	
R20	10KΩ	½		BTS-10K	
R21	4700Ω	½		BTS-4700	
R22	8200Ω	2		BTS-8200	
R23	22KΩ	½	RC-223-2	BTS-22K	
R24	47Ω	½	RC-470-2	BTS-47	
R25	100Ω	½	RC-101-2	BTS-100	
R26	27KΩ	½	RC-273-2	BTS-27K	
R27	47Ω	½	RC-470-2	BTS-47	
R28	820Ω	½		BTS-820	Note 1
R29	1 Meg	½	RC-105-3	BTS-1 Meg	
R30	100Ω	½	RC-101-2	BTS-100	
R31	4700Ω	½	RC-472-2	BTS-4700	
R32	180Ω	½	RC-181-2	BTS-180	
R33	330Ω	½	RC-331-2	BTS-330	
R34	470KΩ	½	RC-474-2	BTS-470K	
R35	1 Meg	½	RC-105-3	BTS-1 Meg	
R36	470KΩ	½	RC-474-2	BTS-470K	
R37	6800Ω 5%	½	RC-682-3	BTS-6800 5%	
R38	470KΩ	½	RC-474-2	BTS-470K	
R39	3900Ω	½		BTS-390	Note 2
R40	12KΩ	1		BTA-12K	
R41	8200Ω 5%	2			
R42	8200Ω 5%	2			
R43	220KΩ	½	RC-224-2	BTS-220K	
R44	100KΩ	½	RC-104-2	BTS-100K	
R45	33KΩ	½	RC-333-2	BTS-33K	
R46	22KΩ	½	RC-223-2	BTS-22K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TELE-KING PART No.	IRC PART No.	NOTES
R47	22KΩ	½	RC-223-2	BTS-22K	
R48	1 Meg	½	RC-105-2	BTS-1 Meg	
R49	1 Meg	½	RC-105-2	BTS-1 Meg	
R50	270KΩ	½	RC-274-2	BTS-270K	
R51	68KΩ	½	RC-683-2	BTS-68K	
R52	15KΩ	½	RC-153-2	BTS-15K	
R53	7500Ω	1	RC-752-3		
R54	330Ω	½	RC-331-2	BTS-330	
R55	470KΩ	½	RC-474-2	BTS-470K	
R56	150Ω	1	RC-151-5	BTA-150	
R57	18KΩ	1	RC-183-5	BTA-18K	
R58	2000Ω	10	RW-202-17		
R59	1 Meg	½	RC-105-2	BTS-1 Meg	
R60	470KΩ	½	RC-474-2	BTS-470K	
R61	56KΩ	½	RC-563-2	BTS-56K	
R62	180KΩ	½	RC-184-2	BTS-180K	
R63	100KΩ	½	RC-104-2	BTS-100K	
R64	10KΩ	½	RC-103-2	BTS-10K	
R65	1 Meg	½	RC-105-2	BTS-1 Meg	
R66	1500Ω	½	RC-152-2	BTS-1500	
R67	12KΩ	2	RC-123-3	BTS-12K	
R68	2200Ω	½	RC-222-2	BTS-2200	
R69A	22K	½	●CRP-3	BTS-22K	
B	8200	½		BTS-8200	
C	8200	½		BTS-8200	
R70	100KΩ	½	RC-104-2	BTS-100K	
R71	680KΩ	½	RC-684-2	BTS-680K	
R72	100KΩ	½	RC-104-2	BTS-100K	
R73	220KΩ	½	RC-224-2	BTS-220K	
R74	2.2Meg	½	RC-225-3	BTS-2.2Meg	
R75	560Ω	½	RC-561-2	BTS-560	
R76	10KΩ 5%	½	RC-103-3	BTS-10K 5%	Note 3
R77	560Ω	½		BTS-560	
R78	560Ω	½		BTS-560	
R79	100KΩ	½	RC-104-3	BTS-100K	
R80	100KΩ	½	RC-104-3	BTS-100K	
R81	27KΩ	½	RC-273-2	BTS-27K	
R82	18KΩ	2	RC-183-8	BTB-18K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TELE-KING PART No.	IRC PART No.	NOTES
R83	470KΩ	½	RC-474-2	BTS-470K	
R84	4.7Meg	½	RC-475-2	BTS-4.7Meg	
R85	2200Ω	½	RC-222-2	BTS-2200	
R86	4700Ω			BTS-4700	
R87	68KΩ			BTS-68K	
R88	270KΩ	½	RC-274-2	BTS-270K	
R89	560Ω	½	RC-562-2	BTS-560Ω	
R90	22K Ω	1	RC-223-5	BTA-22K	
R91	680KΩ	½	RC-684-2	BTS-680K	
R92	68Ω	½	RC-680-2	BTS-68	
R93	22Ω	½	RC-220-2	BTS-22	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TELE-KING PART No.	IRC PART No.	NOTES
R94	6200Ω	2	RC-622-2	BTB-6200	
R95	5.3Ω	1	RC-33G-2		
R96	680KΩ	1	RC-684-5	BTA-680K	
R97	2400Ω	10	RW-242-17		
R98	4.7Ω 5%	10	RW-47G-15		
R99	150Ω 5%	½	RC-151-3	BTS-150 5%	
R100	220KΩ	2	RC-224-8	BTB-220K	
R101	10Ω			BTS-10	Note 4
R102	100Ω	½	RC-101-2	BTS-100	
R103	100Ω	½	RC-101-2	BTS-100	

Note 1. Some models may use a 330Ω resistor in this application.
Note 2. Some models may use a 2700Ω resistor in this application.
Note 3. Some models may use a 12KΩ resistor in this application.
Note 4. Not used in all versions.
● Items R69A, R69B, R69C, C61A, C61B, C61C are combined in one unit.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: TELE-KING PART No.	Stancor PART No.	Merit PART No	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No
T1	117VAC	6.3VAC @ 3.0A	@ 6.3A	T-129		P-2947①②	F-18X①②			31P15

① Drill one new mounting hole.
② Tape 6.3V center tap.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TELE-KING PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Horiz. Output Trans.	T-124D	A-8130 *	HVO-7 *	D-14 *	231T1 *	FB40I *	FLY-3 *
T3	Vert. Output Trans.	T-116B	A-8143	A-3038	A-98X	204T2⑤	Z1802	26S53
T4A	Yoke-Horiz.(16MH)	DY-12M	MDF-72	DY-17-1		209D1④	DF602	Y-7
B	Vert. (40MH)							
T5	Horiz. Linearity(4-29MH)	LM7774	WC-5① ②	MWC-1① ②	WC-1① ②	215R1	RF800(13)	WC-13① ④
T6	Width (8-28MH) (3.5-8MH)	LM7774-3	WC-5	MWC-1	WC-11	214R1⑦	RF800	WC-20

① Enlarge mounting hole.
② Connect to coded blue and red terminals.
③ Connect to coded #1 and #2 terminals.
④ Connect to coded #3 and #4 terminals.
⑤ Drill new mounting hole.
⑥ Use original yoke network.
⑦ Drill new mounting hole.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
3	3	3	HV Rect Plate Lead	HV Rect Plate Lead	3	3
2	2	2	P & 2	2	2	2
1	1	1	1	1	1	1
4	4	4	4	10	4	4
5	5	5	5	9	5	5
6	6	6	8	4	6	6
Connect Width Coil Across ⟶ 4 & 5	4 & 5	4 & 5	4 & 5	4 & 5	4 & 5	4 & 5

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: TELEKING PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T7	4.2KΩ	3.3Ω	T-123	A-3977	A-3930	S-3X	Z1001	24S41	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TELE-KING PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4"X6"	PM	3.3Ω	PM3-1	4636	46A1	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TELE-KING PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Trans.	.9Ω	0Ω					
L2	Ant. Trans.	.9Ω	0Ω					
L3	Ant. Coil	0Ω						Channel 13 position
L4	Ant. Coils	0Ω						
L5	Fil. Choke	0Ω						
L6	Neut. Coil	0Ω						
L7	RF Coil	0Ω						Channel 13 position
L8	RF Coils	0Ω						
L9	Mixer Grid Coil	0Ω						Channel 13 position
L10	Mixer Grid Coils	0Ω						
L11	Osc. Coil	0Ω						Channel 13 position
L12	Osc. Coils	0Ω						
L13	Osc. Coil	0Ω						Channel 6 position
L14	1st Video IF	.5Ω						
L15	RF Choke	4.6Ω		LC-11	19-7047		4630	52 Microhenries
L16	Fil. Choke	0Ω		LC-1	19-1001		4606	1.4 Microhenries
L17	2nd Video IF	.1Ω		LV-9	17-1003	TV-102 *	6249	
L18	Fil. Choke	0Ω		LC-1	19-1001		4606	1.4 Microhenries
L19	3rd Video IF	.2Ω	.2Ω	LV-9	17-1003	TV-102 *	6249	
L20	4th Video IF	.2Ω	.2Ω	LV-9	17-1003	TV-102 *	6249	
L21	Series Peaking Coil	8.5Ω		LP-17	19-3160 ■	TV-184 ■	4644 ■	145 Microhenries; Wound on 10KΩ resistor
L22	Shunt Peaking Coil	9.5Ω		LP-12A	19-3500	TV-188	6174	440 Microhenries
L23	4.5MC Trap	2.6Ω	2.6Ω	LT0-13	16-3445	TV-113	6203	
L24	Series Peaking Coil	8.5Ω		LP-18	19-3160 ■	TV-184 ■	4644 ■	155 Microhenries
L25	Series Peaking Coil	9.5Ω		LP-12A	19-3500	TV-188	6174	440 Microhenries
L26	Sound IF	1.6Ω		LIF-11	16-3445 ▲	TV-113 ▲	1470A ▲	
L27	Quadrature Coil	4.2Ω		LIF-8-C	16-3445 †	TV-113 †	1470A	
L28	Horiz. Osc.	54Ω		LH0-2-E	19-1576	TV-163	6210	

* Enlarge mounting holes.
■ Parallel with 10KΩ resistor.
▲ Reverse coil in can.
† Use one winding only.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: TELE-KING PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L29	.230A	66Ω	2HY	LC-9	C-2325	C-2996	C-17X	C5030 ①	

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: TELE-KING PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.270A	SR-350	1238A	RS350	6S350	350A	6Q4	
M2	.270A	SR-350	1238A	RS350	6S350	350A	6Q4	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: TELE-KING PART No. FUSE	TELE-KING PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG-P/T Slo-Blo	1½A 250V	FE-4		31501.5 (1½A-3AG P/T-Slo-Blo)		MDV 1½	
M4	3AG P/T	½A 250V	FE-5		318.500 (½A-3AG P/T)		GJV-½	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: TELE-KING PART No.	SYLVANIA PART No.	FEDERAL PART No.	NOTES
M5	1N64A		1N60 or 1N132	1N60 or 1N64A	Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	TELE-KING PART No.	NOTES
M6	Tuner		VHF
M7	Focus Magnet	LF-8	Includes centering device
M8	Ion Trap	IT-1A	Alternate part #IT-5
M9	Switch		Antenna
B2	Trimmer Cap.	CT-6	Horiz. Drive (25-280MMF)

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If V6, V10, V12, V13, V15 and V16 fail to light, check these tubes, since these tubes are connected in series. If filaments light check M1 and M2. Check M3 fuse, R98 and C1. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check M1 and M2. Check C1. Check B+ filter and decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V14, V15, V16 and V17. Check M4 fuse. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, C83, C84, C86, C81, C82, R94 and other associated components.	Check L28, C76, C79, C77, R86, R88, R85 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V15 and V16. Adjust B2. Check M1 and M2. Check C1, R94, C79, C78, R89 and other associated components.

BLOOMING

Check by substitution V15, V16 and V17. Check M1 and M2. Check C1, T2, and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

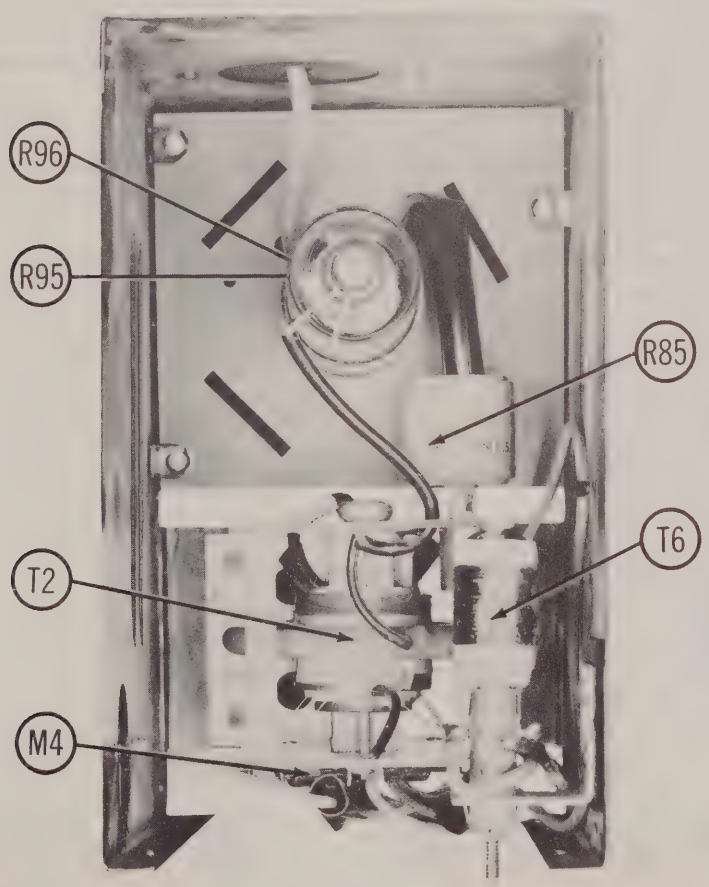
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



HIGH VOLTAGE COMPARTMENT

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

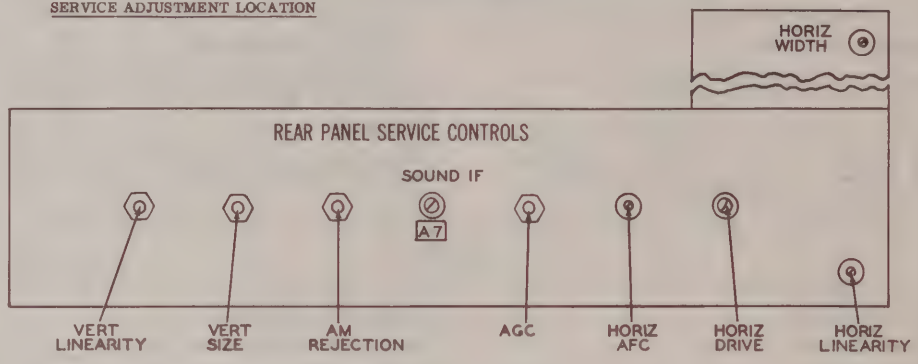
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L28) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT - AM REJECTION CONTROL

To eliminate sound IF detector buzz, adjust the "AM Rejection Control" located on rear apron of chassis for maximum volume and minimum buzz. If results are unsatisfactory see Alignment Instructions on page 6.

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

BUILT-IN ANTENNA TUNING

Built-in antenna can be adjusted from side of the cabinet. Adjust for a picture of maximum contrast and minimum ghosts.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push-on type control knobs from front panel.
2. Remove 6 wood screws. Remove rear cover.
3. Remove 2 wood screws. Remove antenna bracket.
4. Remove 2 wood screws. Remove interlock bracket.
5. Disconnect speaker leads.
6. Remove 4 speaker nuts. Remove speaker.
7. Remove 6 chassis bolts. Remove chassis.

PROPERTY OF
L. F. ISI...
3924 MEADE ST.
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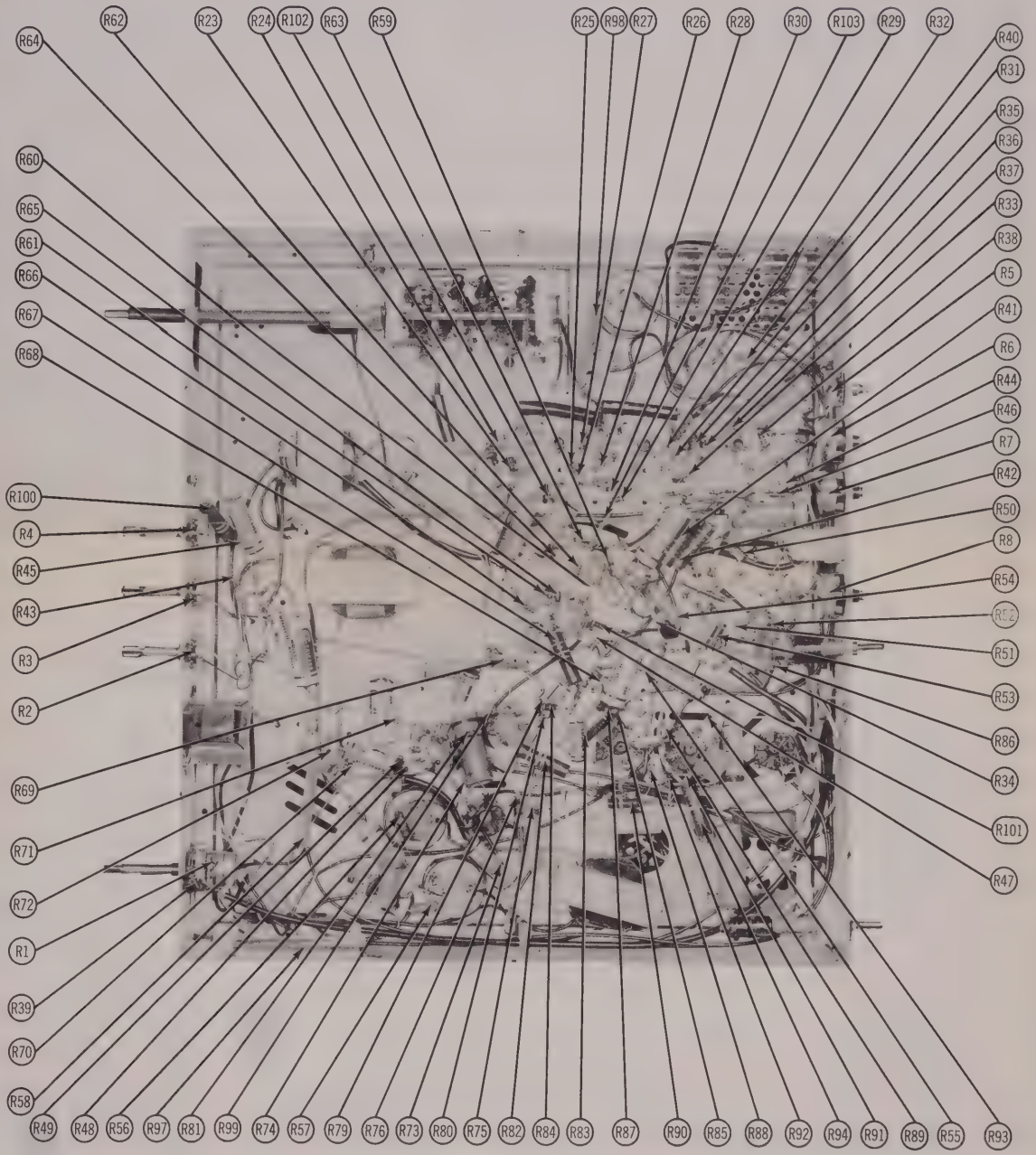

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
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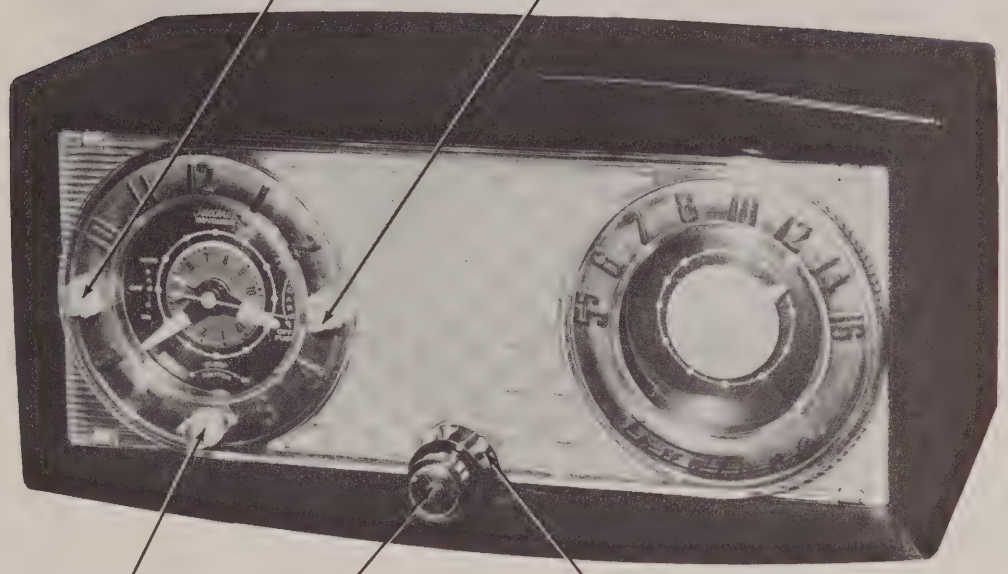
TRUETONE
MODELS D2418A, D2419A, D2420A



TRUETONE
MODELS D2418A, D2419A, D2420A

TRADE NAME	Truetone Models D2418A, D2419A, D2420A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Four)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output
POWER SUPPLY	115 Volts AC-60 Cycles — RATING .27 Amp. @ 115 Volts AC
TUNING RANGE—BROADCAST	540KC.-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to grid (pin 7) of converter (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TRUETONE MODEL D2418A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	8C-15262	AFH2-15		B015		FP213	TVL-2432	
B	▲30	150								
C2	.05	200	8D-14460	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220									
B	5000									
C	5000		♦20119303	♦PA-113-2	♦PC-151	♦116TM2	♦1408-02		♦DT-2	
D	250									
E										
C4	.01	200	8D-17258	P288-01	D6-103	PJ2S1	GP2-333-103	PT411	2TM-S1	
C5	.047	600	8J-16081	689ZX-047	DF-503	PJ6S47		PT6147	6TM-S47	
C6	.18	400	8D-11111	P488-18		CUB4P18		PT4018	4TM-P18	

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B and R5C are combined in one unit.
When replacing items separately items C3D and C3E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	10B-19797		A47-1Meg-Z			Volume
B	Shaft		Not Req.		RS-3/16			Attach-to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	47KΩ	½	9B1-82	BTS-47K	
R3	150Ω	½	9B1-52	BTS-150	
R4	2.2Meg	½	9B1-33	BTS-2.2Meg	
R5A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦ 20119303	BTS-470K	
C	470KΩ	½		BTS-470K	

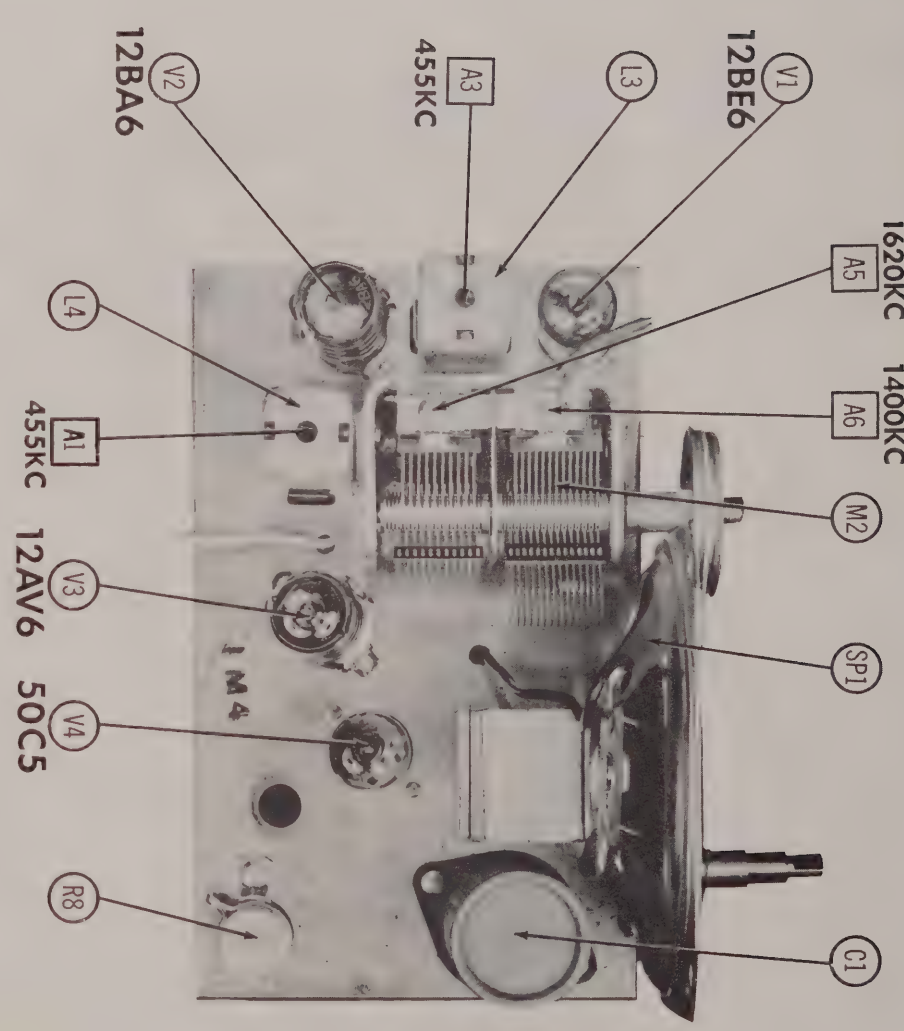
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6	150Ω	½	9B1-52	BTS-150	
R7	1200Ω	2	9B4-63	BTB-1200	
R8A	195Ω	5	B-9M-19778		
B	50Ω	5			
R9	220KΩ	½	9B1-27	BTS-220K	

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.4KΩ	3.3Ω	12C17595-1	A-3332	A-3025	S-12X	Z1101	26S58 ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3. 3Ω	18A-19739 ①			① One corner cut off close to speaker cone.

COILS (RF-IF)

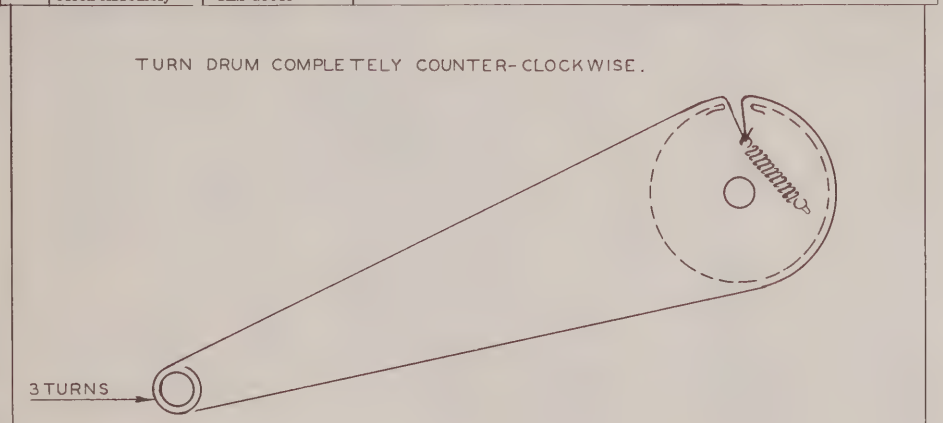
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3. 3Ω		13E-19801-2				Includes cabinet back
L2	Osc. Coil	. 8Ω	5. 5Ω	13D-19064	14-1073 *		69-Osc. ■	
L3	Input IF	14Ω	14Ω	13B-17731	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	14Ω	13B-17731	16-6758	BC-353	12GC2	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.060ADC	21J19594	1003	RS75	6S75	100A	5M4	

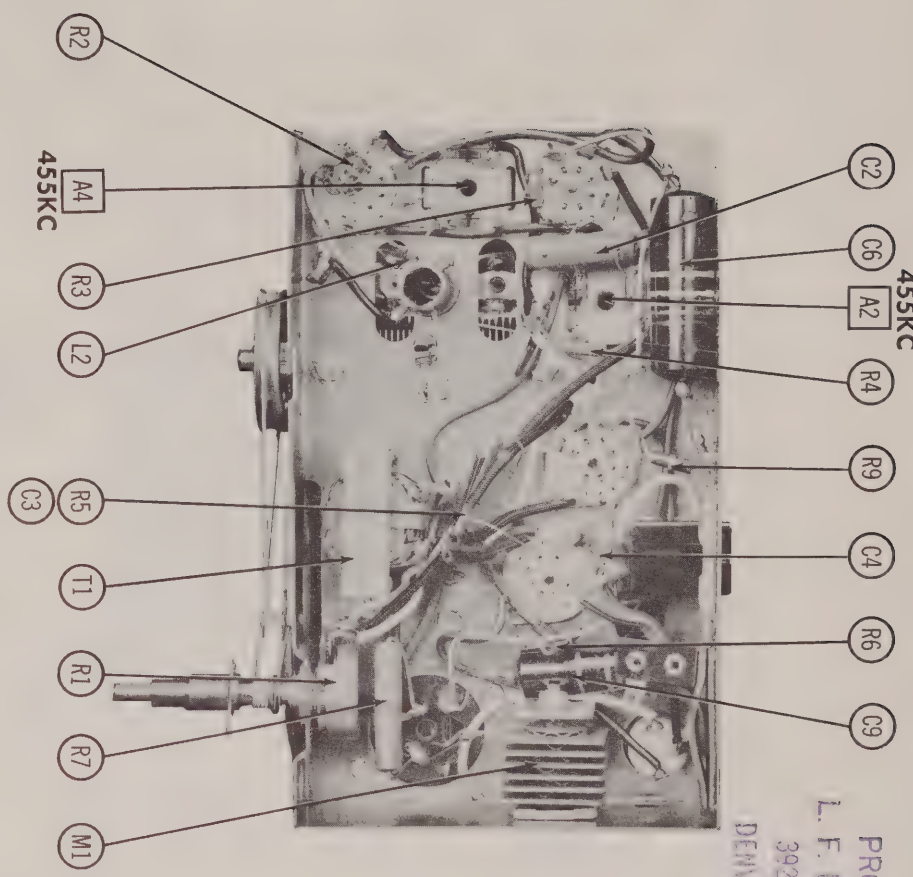
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M2	Tuning Cap.	8A-19740	32-518MMF, 26-160MMF
	Cabinet	5C-23048-A93	Ebony - Model D2418A
	Cabinet	5C-23048-A89	Red - Model D2419A
	Cabinet	5C-23048-A87	White - Model D2420A
	Knob	5B-23010-A93	Volume - Ebony or Red - Models D2418A, D2419A
	Knob	5B-23010-A87	Volume - White - Model D2420A
	Knob	5B-23012-A93	Tuning - Ebony or Red - Models D2418A, D2419A
	Knob	5B-23012-A87	Tuning - White - Model D2420A
	Knob	5B-20711-A97	Clock (3 used)
	Dial Pointer	2G-23292	
	Clock Assembly	21M-23045	



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



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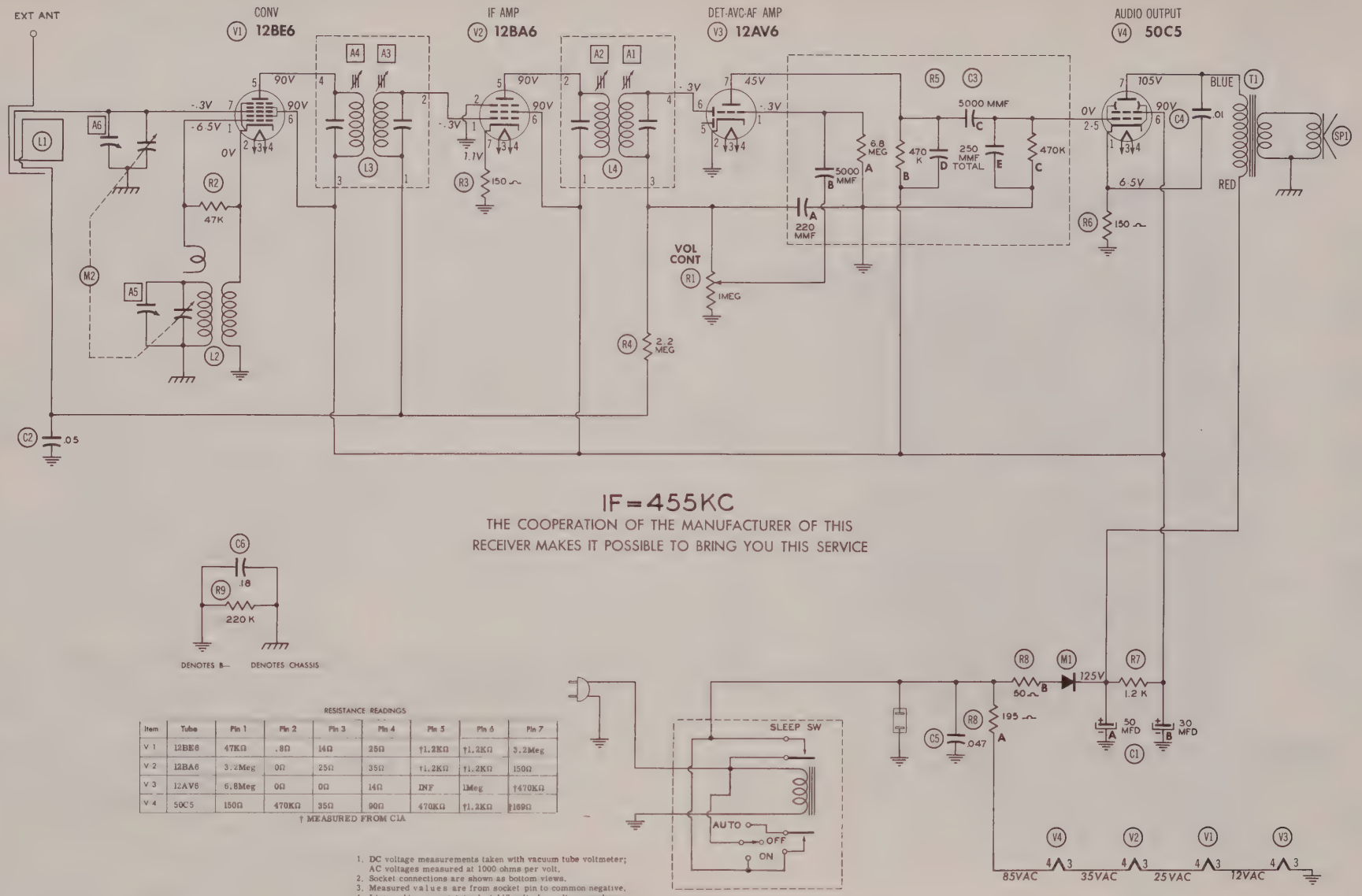
DENVER, COLORADO

TRUETONE
MODEL D2418A



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	47KΩ	.8Ω	14Ω	25Ω	†1.2KΩ	†1.2KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	25Ω	35Ω	†1.2KΩ	†1.2KΩ	150Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	14Ω	INF	1Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	35Ω	90Ω	470KΩ	†1.2KΩ	‡169Ω

† MEASURED FROM C1A

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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257-18

WESTINGHOUSE MODELS H-414P4, H-415P4, H-461P4, H-462P4, H-463P4, H-464P4, H-479P4 (Ch. V-2182-2)

PROPERTY OF
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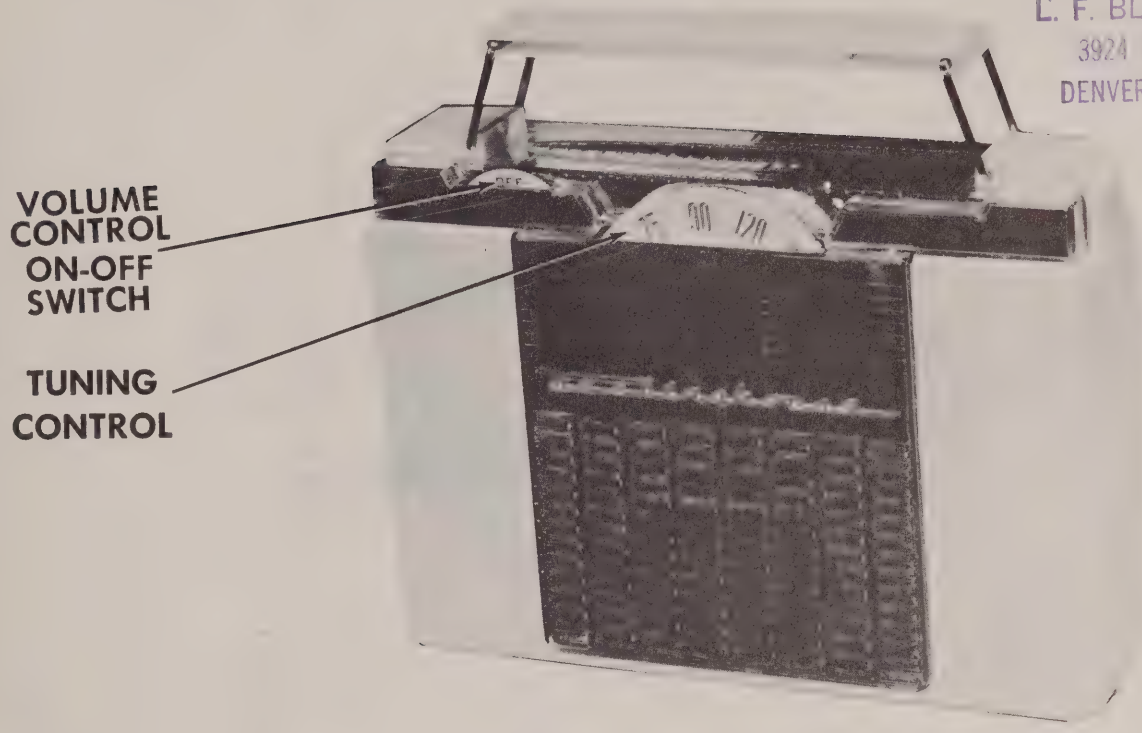
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE MODELS H-414P4, H-415P4, H-461P4, H-462P4, H-463P4, H-464P4, H-479P4 (Ch. V-2182-2)



WESTINGHOUSE MODELS H-414P4, H-415P4, H-461P4, H-462P4, H-463P4, H-464P4, H-479P4 (Ch. V-2182-2)

TRADE NAME	Westinghouse Models H-414P4, H-415P4, H-461P4, H-462P4, H-463P4, H-464P4, H-479P4 (Ch.V-2182-2)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N.J.
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	1.5 Volts DC "A" Supply & 67.5 Volts DC "B" Supply
RATING	250MA @ 1.5 Volts DC & 10MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1400KC	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of antenna. Adjust for maximum output while rocking tuning gang thru 1400KC signal.
3.		"	600KC	600KC	"	A6	Adjust for maximum output while rocking tuning gang thru 600KC signal.

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL H-414P4, (Ch. V-2182-2)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF Amp	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	10	90	V-6321-2	PRS150/12		BBR10-90T		TC42	TVA-1406	
C2	.05	200	RC10W2503M	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	5000		V-5596	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C4	4		V-10710-4	SI4NP0	T		NP0K-400			
C5	1500		V-9863-4	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C6	100		V-10710-5							
C7	100		V-10710-5							
C8	5000		V-5596	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C9	2000		V-9863-2	BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	
C10	2000		V-9863-2	BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	V-11129-1		A47-2Meg-Z			Volume
B	Shaft		Not Req.		FS-3			Attach to R1A
C	Switch		Not Req.		SWE-20			Attach to R1A

RESISTORS

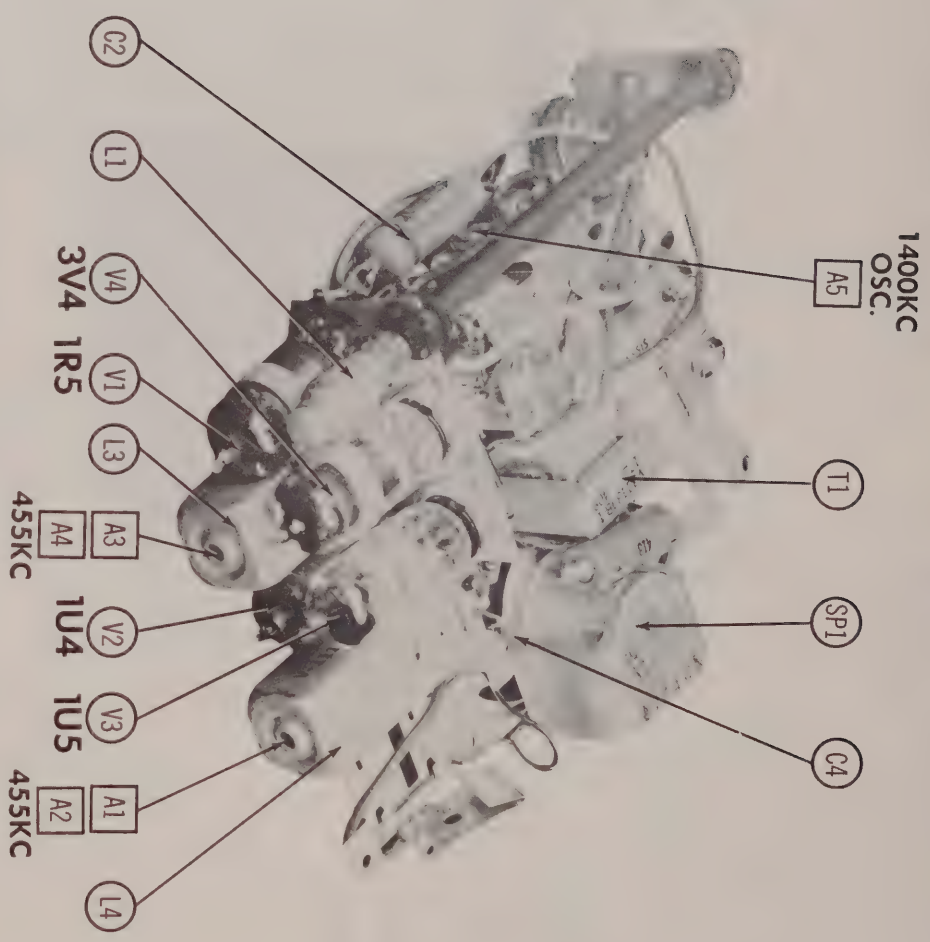
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R2	100KΩ	½	RC20AE104K	BTS-100K	
R3	15KΩ	½	RC20AE153K	BTS-15K	
R4	4.7Meg	½	RC20AE475M	BTS-4.7Meg	
R5	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R6	47KΩ	½	RC20AE473M	BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R7	4.7Meg	½	RC20AE475M	BTS-4.7Meg	
R8	1Meg	½	RC20AE105M	BTS-1Meg	
R9	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R10	390Ω	½	RC20AE391K	BTS-390	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Westinghouse PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	10.2KΩ	12.8Ω	V-11139-B						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	2 x 3"	PM	12.8Ω	V-11135C			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1.5Ω		L1V11132-2				
L2	Osc.Coil	1.1Ω	8.5Ω	L2V11128-1	14-1073		69-Osc.	
L3	Input IF	20Ω	20Ω	T1V11138-1	16-6758	BC-352	12-C1	
L4	Output IF	20Ω	20Ω	T2V11138-2	16-6758	BC-353	12-C2	

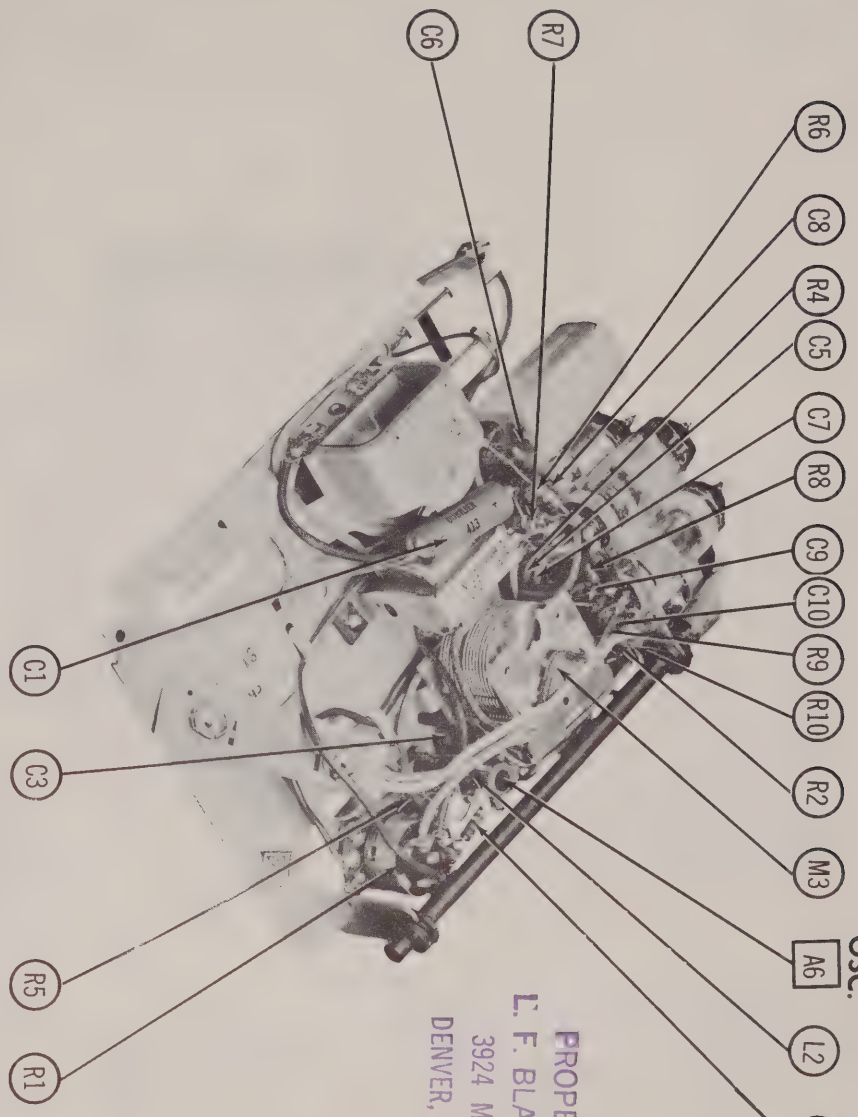
BATTERIES

ITEM No.	VOLTAGE	Westinghouse PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1.5V		950			2R			
M2	67.5V			467			XX45		

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M3	Tuning Cap.	V-11126-1	13-185MMF, 15-113MMF
	Cabinet Assy.	V-1267-6	Includes back cover, handle, clips and grille cloth - Model H-461P4
	Cabinet Assy.	V-1267-7	Includes back oover, handle, clips and grille cloth - Model H-462P4
	Cabinet Assy.	V-1267-8	Includes back cover, handle, clips and grille cloth- Model H-463P4
	Cabinet Assy.	V-1267-9	Includes back cover, handle, clips and grille cloth- Model H-464P4
	Cabinet Assy.	V-1267-4	Includes back cover, handle, clips and grille cloth- Model H-414P4
	Cabinet Assy.	V-1267-5	Includes back cover, handle, clips and grille cloth- Model H-415P4
	Cabinet Assy.	V-1267-10	Includes back cover, handle, clips and grille cloth- Model H-479P4
	Knob	V-11112-6	On/off/volume - Model H-461P4
	Knob	V-11112-7	On/off/volume - Model H-462P4
	Knob	V-11112-8	On/off/volume - Model H-463P4
	Knob	V-11112-9	On/off/volume - Model H-464P4
	Knob	V-11112-5	On/off/volume - Model H-415P4
	Knob	V-11112-4	On/off/volume - Models H-414P4, H-479P4
	Dial	V-11111-6	Model H-461P4
	Dial	V-11111-7	Model H-462P4
	Dial	V-11111-8	Model H-463P4
	Dial	V-11111-9	Model H-464P4
	Dial	V-11111-5	Model H-415P4
	Dial	V-11111-4	Models H-414P4, H-479P4

CHASSIS—BOTTOM VIEW



PROPERTY OF
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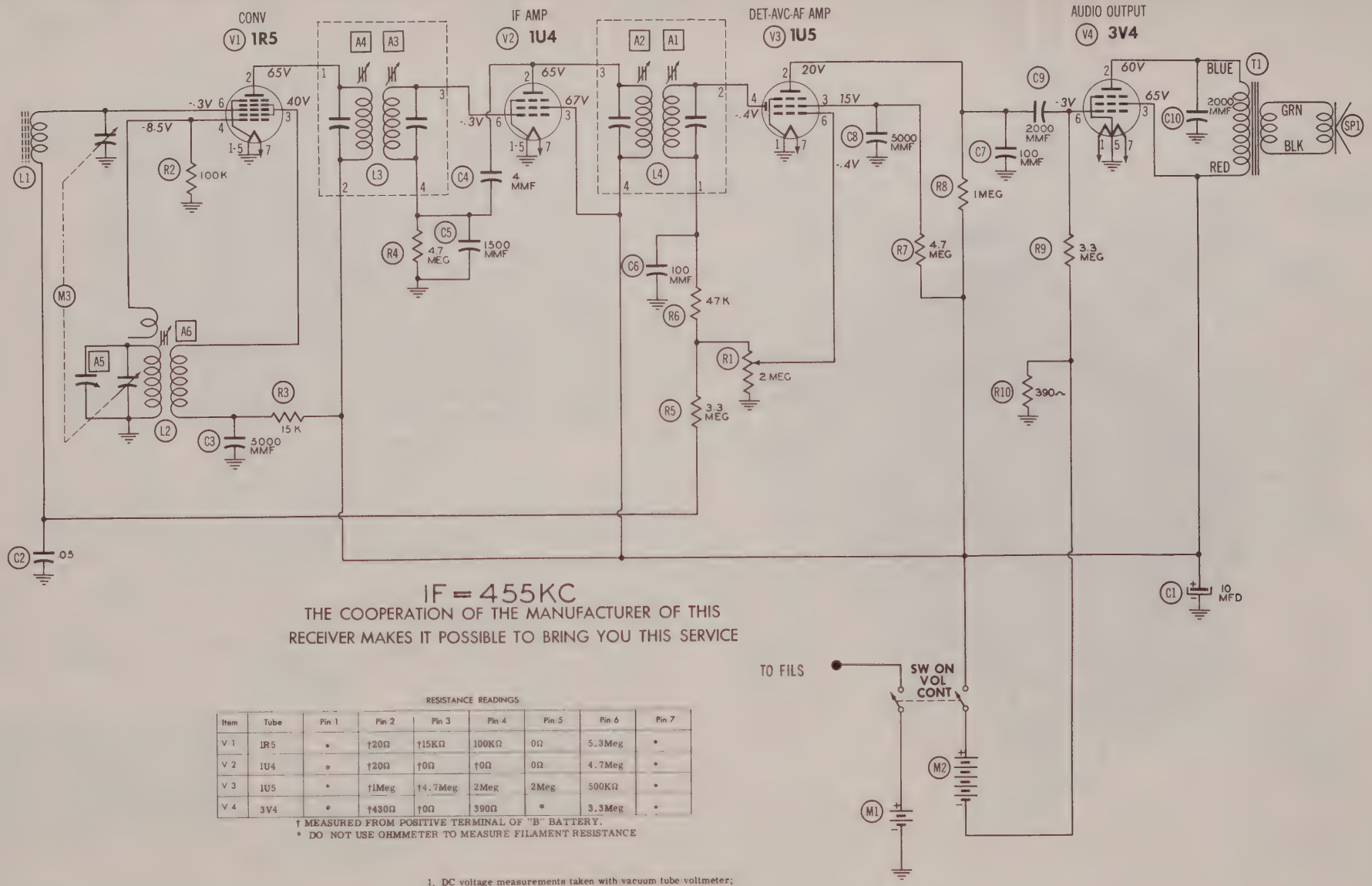
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE
MODEL H-414P4, (Ch. V-2182-2)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†20Ω	†15KΩ	100KΩ	0Ω	5.3Meg	*
V 2	1U4	*	†20Ω	†0Ω	†0Ω	0Ω	4.7Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	2Meg	2Meg	500KΩ	*
V 4	3V4	*	†430Ω	†0Ω	390Ω	*	3.3Meg	*

† MEASURED FROM POSITIVE TERMINAL OF "B" BATTERY.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter;
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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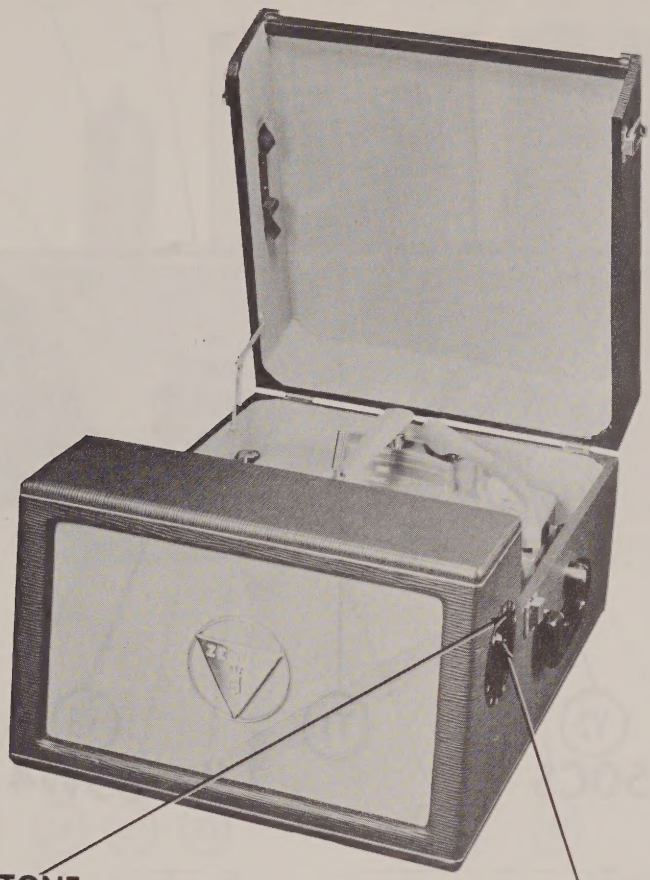
ZENITH
MODEL S-9013 (Ch. 3M01)



ZENITH
MODEL S-9013 (Ch. 3M01)

TRADE NAME	Zenith Model S-9013 (Ch. 3M01)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens, Ave., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AU6 AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .22 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON ZENITH RECORD CHANGER UNIT S-14054-SEE PHOTOFACT SET # 226 FOLDER #13.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AU6	12AU6	7BK	
V2	Audio Output	50C5	50C5	7CV	
V3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲ 60	150	22-2442	AFH4-37		D029		FP409 & TC45	R1431	
B	■ 40	150								
C	▲ 20	150								
D	20	25								
C2	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C3	1000		22-2112	S11000	D6-102	TP52	GP2L-102	UC-521	5GA-D1	
C4	1000		22-2112	S11000	D6-102	TP52	GP2L-102	UC-521	5AG-D1	
C5	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	Note 1
C6	.1	400	22-2061	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C7	.001	600	22-2128	P688-001	D6-102	CUB6D1	GP2-333-102	PT621	6TM-D1	
C8	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C9	.01	400	22-1846	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C10	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C11	.047	400	22-1775	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C12	.047	200		P288-047	DF-503	PJ2S47		PT4147	2TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	3 Meg	½	63-2948	* QJ-566R				Tone-Panel
B	3 Meg	½						Volume & switch tapped ② 1 Meg Rear

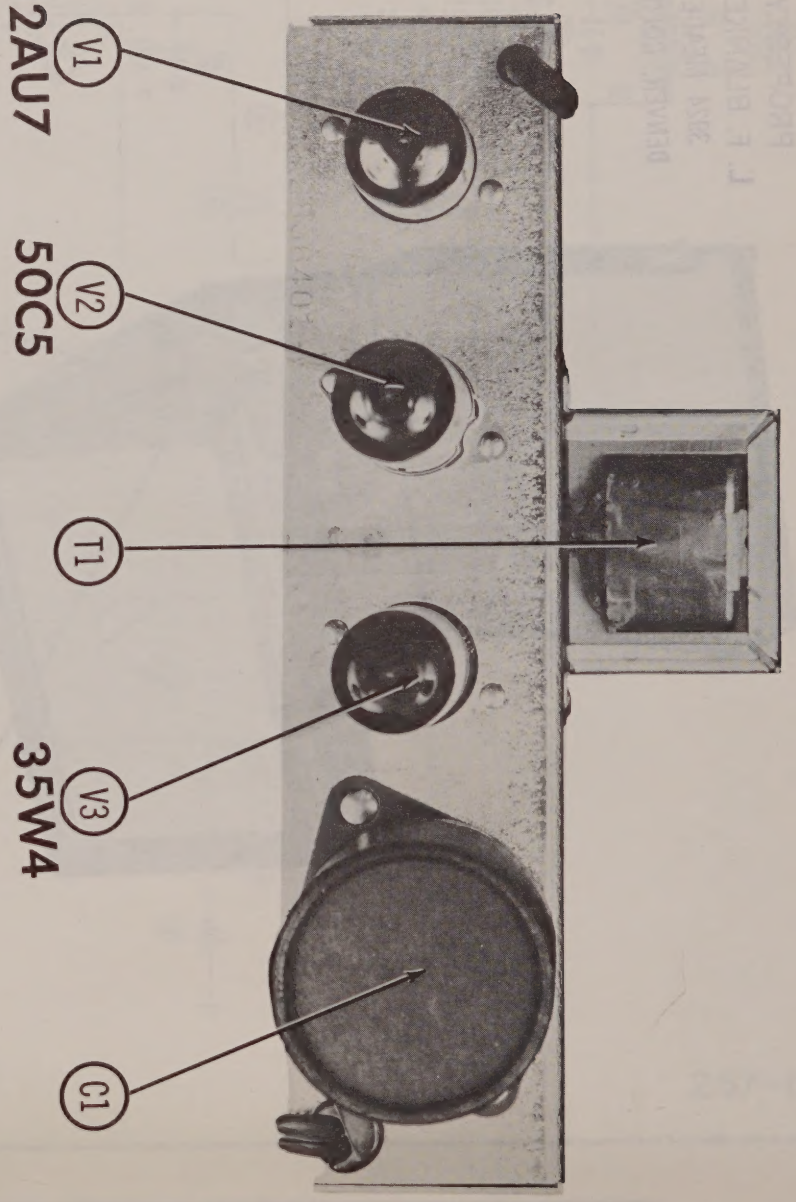
* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-140 & P1-121 (Panel) B18-140X & R7-208 (Rear) & SWITCH 76-L

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R2	150KΩ	½	63-1877	BTS-150K	
R3	4.7Meg	½	63-1940	BTS-4.7Meg	
R4	1200Ω	½	63-1789	BTS-1200	
R5	120KΩ	½	63-1873	BTS-120K	
R6	68KΩ	½	63-1862	BTS-68K	
R7	470KΩ	½	63-1898	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R8	150Ω	½	63-1750	BTS-150	
R9	1500Ω	½	63-1792	BTS-1500	
R10	6800Ω	½	63-1821	BTS-6800	
R11	22Ω	½	63-1716	BTS-22	
R12	100KΩ	5	63-1870	BTS-100K	
R13	150Ω	5	63-2767	PW7-150	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.3Ω	95-1382	A-3336	A-3031		Z1103	24S50A	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	7½"	PM	3.3Ω	49-756	ST-115 Mod. P8-V	8A21	

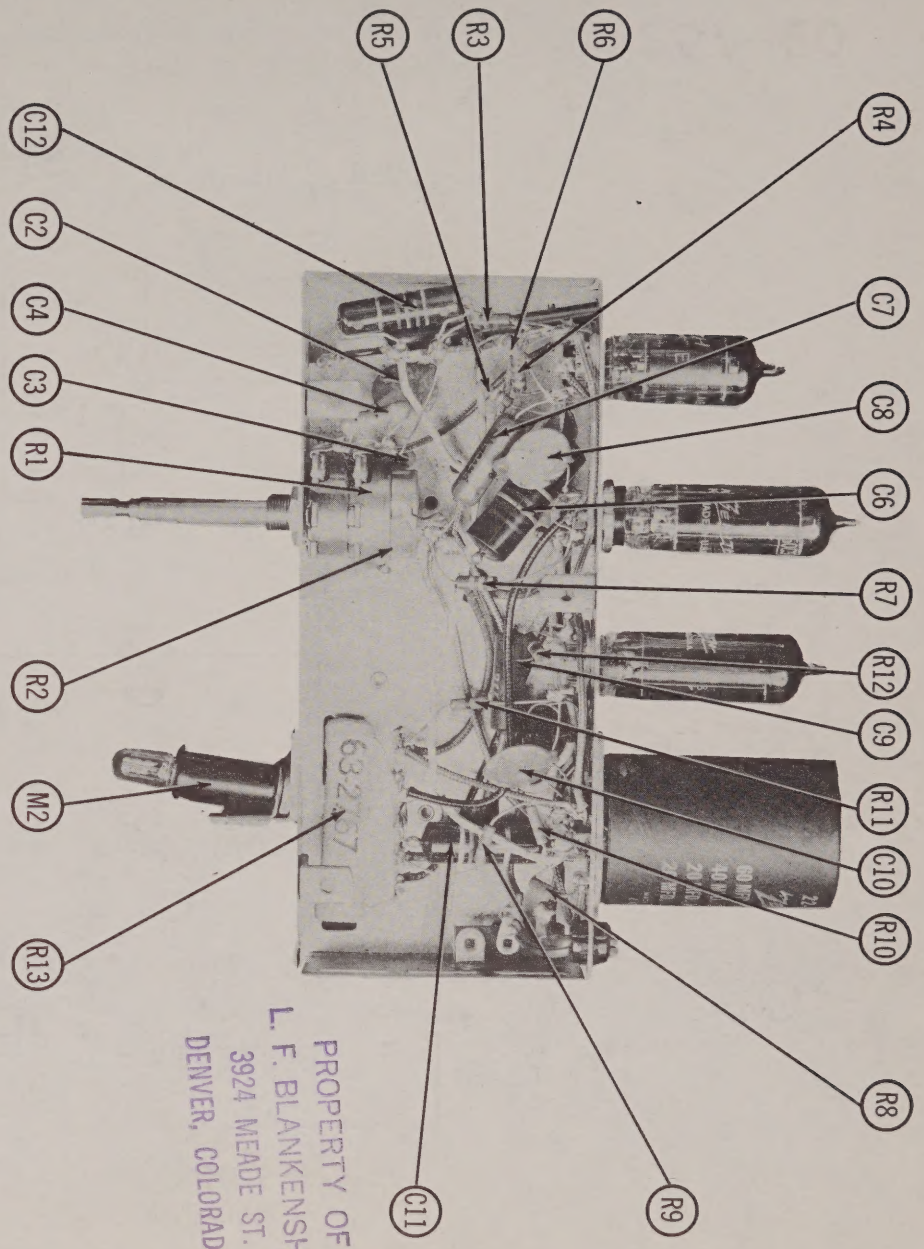
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	ZENITH PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	142-72							

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Dial light	100-105	Bayonet, # NE51
	Knob	46-1269	Volume
	Knob	46-1270	Tone

CHASSIS—BOTTOM VIEW



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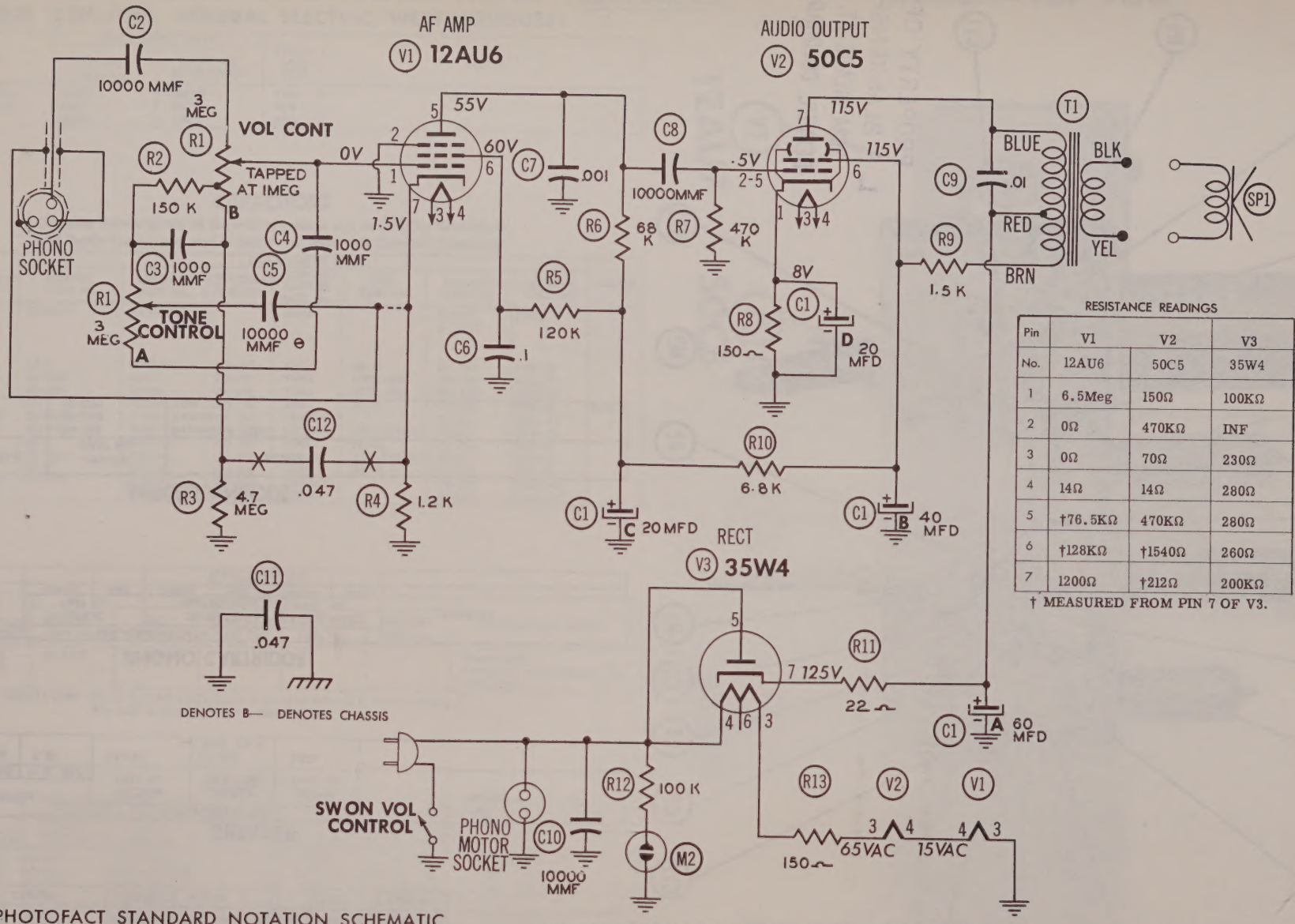

RESISTANCE READINGS

Pin No.	V1 12AU6	V2 50C5	V3 35W4
1	6.5Meg	150Ω	100KΩ
2	0Ω	470KΩ	INF
3	0Ω	70Ω	230Ω
4	14Ω	14Ω	280Ω
5	†76.5KΩ	470KΩ	280Ω
6	†128KΩ	†1540Ω	260Ω
7	1200Ω	†212Ω	200KΩ

† MEASURED FROM PIN 7 OF V3.

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